THIRD BIENNIAL REPORT

OF THE

MONTANA STATE BOARD OF HEALTH

FROM

December 1, 1904,

TO

November 30, 1906.

THOS. D. TUTTLE, M. D., Secretary.

"INDEPENDENT PUBLISHING COMPANY, HELENA, MONTANA."
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OFFICE OF THE SECRETARY
OF THE STATE BOARD OF HEALTH OF MONTANA.
Billings, Mont., December 1, 1906.

To Hon. J. K. Toole,
Governor of Montana.

Sir:—In compliance with the laws of this State, I present to you the accompanying report of the State Board of Health for the two years ending November 30th, 1906.

Very respectfully,
THOMAS D. TUTTLE, M. D.,
Secretary, State Board of Health.

INTRODUCTION.

In the following report we have digressed somewhat from the usual form of such reports. We have endeavored to give only such matter as will be of interest to the people of our state and of benefit to them. We do not believe that a publication of the minutes of the various meetings of the board will be of any benefit to any one, and hence they have been omitted. Instead of giving the full report of those who have studied the subject of "Spotted Fever" we have tried to give an unbiased statement of what has been accomplished in this line of work. The report is intended to present the sanitary conditions in the state as they have existed during the two years covered by this report, and this we have tried to do in language that may be understood by all. We are directed to make recommendations to the Legislature of the state and this we have done to the best of our ability. We are directed to collect vital statistics but we are not supplied with the means of doing this, however, a good record of the deaths in the state has been secured and is presented herewith, together with deductions drawn therefrom. These records serve to contradict some false ideas that have existed with regard to the fatality of communicable diseases in our state. In the matter of contagious and infectious diseases, we present the records as they were reported to this board. We do not contend that they are complete, we know that they are not, but we do contend that they are as complete as they can be made under the present laws of the State.

THOS. D. TUTTLE, M. D.,
Secretary.

ACKNOWLEDGEMENT.

In submitting this report I desire to express my heartfelt appreciation of the noble assistance rendered by the rank and file of the members of the medical profession of this State. Almost without exception the physicians of the State have not only complied with every requirement of the State and local boards of health, but in many instances they have devoted their time and efforts to instructing their own patients in the important matter of sanitation. In addition to this these men have devoted their time in explaining to their patients the necessity of quarantine measures and many of them have made enemies by insisting that the rules established by the boards of health be observed. All this is done absolutely without prospect of any remuneration, either in a monitary form or in glory, and with the absolute certainty that these very efforts will deprive them of cases, and therefore an additional income, that would certainly result from negligence of sanitary matters and failure to observe quarantine regulations. So apparent has this become that a prominent attorney recently addressed me as follows: "See here, what game are you doctors up to? I know that you are not trying to suppress contagious diseases for nothing, and you certainly knock yourselves out of a lot of good pay cases by your actions." The only answer I could give was that "Doctors are not like lawyers, laughing in their sleeves when they see their clients going deliberately into trouble because the lawyer knows he will get a nice fee for getting him out." Then why do doctors do this? Well, they do it, and they do not have to give their reasons for it. They do not pose as great humanitarians, they do not go about with their hands out for boquets, and because you could not understand why they do these things they will tell you, in nine cases out of ten, that they do it because they do not want to listen to you kick about being quarantined when one of these diseases appears in your house.

The medical profession may have their little fights among themslves but when it comes to working for the health of the people they all have their shoulders to the wheel and all push the same way.

SUGGESTIONS.

In conformity with the laws of this State, which require that this board shall make such suggestions to the Legislature of the State as it shall deem proper, we respectfully submit the following suggestions as regards the enactment of laws to further the protection of the public health in our State.

PURE FOOD LAWS.

Our State is now being made the dumping ground for all the impure foods for which sale can not be found in other states. The result is that our markets are flooded with food products which would not be permitted to be offered for sale in other states. Not only are manufactured foods of an impure and adulterated character offered for sale in our State as pure foods, but fruits and vegetables, so far advanced in the process of decomposition as to make their consumption as foods detrimental to health and dangerous to life, may be seen on sale in any town in our State at any time, and especially during the summer months. Not only impure foods, but impure and improperly labeled drugs are offered for sale in our state, drugs that contain large quantities of narcotics and which are dangerous to life, and which people take and administer to children without having any idea of the fact that they are giving the most deadly poisons, drugs that are labeled as medicines but which are simply poor grades of whisky and which contain more alcohol than does whisky. It is a notorious fact that opium, morphine and cocaine are freely sold in our State without a physician's order. It is not at all uncommon to see those addicted to the use of these drugs purchase them in large quantities at drug stores in our State, and not the least effort is made to conceal the fact that such sales are constantly made.

We unanimously urge the passage of a pure food and drug law that will be effectual in preventing the sale of impure foods and drugs in our state, and the sale of poisonous drugs, except on the order of a physician. We respectfully call your attention to the fact that a law which simply prohibits the sale of such articles is worse than useless, and unless the law provides for the chemical analyses of foods and drugs and provides for special officers to see that the law is enforced it will prove worse than no law at all.

VITAL STATISTICS.

We respectfully call your attention to resolutions of United States Congress set forth on page —— of this report, in the matter of securing accurate and complete registration of births and deaths for legal, sanitary and statistical purposes.

The data secured from such registration of births and deaths has been shown to be of the most vital importance from a legal standpoint and has long been known to be the foundation of successful sanitary measures.

We earnestly recommend that a law, in conformity with that recommended by the United States Census Bureau and by the American Public Health Association be passed.

BOARD OF HEALTH LAW.

The decision of the Supreme Court, published elsewhere in this report in the case of Yegen against the County Commissioners of Yellowstone county, leaves the entire State practically without protection against the spread of communicable diseases or the authority to prevent the introduction of such diseases from other states. It shows that county commissioners have no authority to build pest houses or houses under any other name to care for those infected with dangerous communicable diseases. It does away, or declares invalid, all that portion of the law which provides for quarantine of dangerous communicable diseases. In short, it simply leaves a state board of health and county boards of health with their hands tied, worse than this, neither of these boards have any hands.

We earnestly recommend that a board of health law be adopted that will embrace all the features of the old law, declared unconstitutional because of a defective title, but with these changes: All local and county boards of health should be made directly responsible to the state board of health and the state board of health should have authority to depose any local or county health officer for non-performance of duty; every county should not only be given unquestioned authority to provide pest houses but should be required to provide suitable places for the care and retention of those afflicted with dangerous communicable diseases; the care of those under quarantine should be provided for, so that quarantine, a measure for the protection of the public, shall not work a hardship on the individual; the state board of health should be given authority to regulate the shipment of dead bodies into, through or out of this State (this subject is dealt with under the head of Vital Statistics); the proper ventilation of all school houses and other public buildings should be provided for; the secretary of the state board of health should be required to devote his entire time to this work and to directly supervise the work of all local and county health officers; the proper registration of births and deaths is an important matter and should be provided for.

NEED OF A STATE CHEMICAL AND BACTERIOLOGICAL LABORATORY.

During the year ending June 30, 1906, there were 61 deaths in the State from diphtheria. During the two years ending November 30th, 1906, there were 860 cases of diphtheria reported to the state board of health. In a great many instances the diagnosis of diphtheria can be made only by a bacteriological examination and unless free bacteriological examinations are provided by the State they will not be made. The result is that a great many doubtful cases are called tonsilitis and no precautions taken to prevent contagion. Many of these doubtful cases are diphtheria and from them cases of true diphtheria develop. In November, 1904, 19 cases of diphtheria developed from a single case of "sore throat" in the daughter of a milk man. Had a cultur been made from this throat and examined properly the true nature of the "sore throat" would have been made known and all the other nineteen cases prevented, and four lives saved. Out of the paltry allowance appropriated for the use of the state board of health a bacteriologist was employed and free examination for diphtheria provided so long as the fund lasted, but this fund was exhausted, or nearly so, before the first of May and the examinations had to be discontinued. While free examinations were provided it was impossible, on account of lack of funds to supply ever doctor in the State with culture tubes, and this resulted in only a small percentage of doubtful cases being examined bacteriologically. In one case that I saw in consultation I suggested that a culture be made and sent in for examination. The family doctor stated that he did not think it necessary to put the State to that expense for he was satisfied that it was not diphtheria. The child recovered, but his brother contracted the disease and died from it. The first case was doubtful, but it was diphtheria. A bacteriological examination would have shown this to be true, the little brother would have been given antitoxine and not only his life saved but the disease prevented. Had an examination been made in every case reported as diphtheria it would have cost the State an average of $90.00 per month, or $1,800 per year. In addition to this there were many doubtful cases that were never reported as diphtheria, some of which were diphtheria which should have been examined, probably as many or more than there were cases of diphtheria reported. Thus proper measures for the prevention of diphtheria alone would cost enough to provide for a competent bacteriologist and chemist, while the saving of a single life, from a purely monitary value to the State, would more than cover this cost.

On several occasions the state board of health was asked to have water analyses made by the various county health officers. The county boards of health realized the necessity of such examinations but thought the State should have the analyses made and therefore would not appropriate the necessary money for such examinations. The state board did not have sufficient funds to go into the question of water analyses hence this important branch of the work had to be neglected. Water analyses would doubtlessly have prevented some of the typhoid fever of our state from which 89 people died, 79 of whom were in the prime of life. Water analyses were made in only one county and it is probable that this investigation would not have been made had it not been for the fact that two towns were involved in the discussion and they brought pressure to bear on the county commissioners.

Our present law requires that milk be analyzed by the meat and milk inspector. These analyses should be made by a chemist, because; first, the chemist being centrally located can not be accused of playing favorites; second, very few physicians are able to make these examinations either on account of lack of time or on account of lack of experience in chemical anaylses. They thoroughly understand the principles underlying the process, but very few of them have made any such analyses since they left college, it being customary today for physicians to send chemical analyses to a chemist; and, third, by having a state chemist to make all analyses the cost of meat and milk inspection would be greatly reduced.

Our state needs a pure food law. We are the dumping ground for all the impure-food products of the country. Scarcely a day passes that some impure food firm does not write to the secretary of this board asking for a copy of our pure food laws, and often enclosing a sample sticker printed in letters so small that a microscope is required to read them and on a background of such a color that they are made more difficult to read. If a pure food law is passed that is to be of any benefit whatever a state chemist is an absolute necessity. A pure food law that does not provide means to determine the purity or impurity of foods offered for sale in our State is not worth the paper the original copy is written on. If we are to have a pure food law, let us have one that is operative or let us have none. Do not let the people think they are being protected by a pure food law when the law is worthless. If they have an operative pure food law they can depend on the foods offered them; if the law is not operative it simply leads them to think they are protected and they buy impure foods on the supposition that they have been passed on by some State authority. Even today, some unprincipled people are operating along this line. Not long ago the secretary of this board declined to accept a certain brand of maple syrup, so-called, and was informed by the clerk that that syrup was absolute pure maple syrup, that it had been examined and passed on by the state board of health. He was asked by what board of health and this young man brazenly replied "why the state board of health of Montana, of course." This lie is probably fostered on a large percentage of the people of our State, when in fact, we have no pure food laws and the state board of health has nothing to say about the foods that shall or shall not be offered for sale in this State. Some of the members, at least, of this board try to keep posted on what are pure foods by reading the findings of other state boards who have laboratories and who analyze the various foods offered for sale in their states.

The question of location of a state chemist and bacteriologist has been much discussed. Some holding that the state chemist and bacteriologist should be entirely separate from any institution, while others hold that he should be the professor of chemistry in one of our institutions. If by increasing the salary of the professor of chemistry in one of our institutions a competent chemist and bacteriologist can be secured and the institution thereby gain a better teacher, we can see no objection to the plan. If on the other hand the work of the state chemist and bacteriologist should prove to be too heavy to enable him to attend to both this work and the teaching, one or both would be neglected. To secure an independent man for this work would not require a large salary, as his entire time would not be occupied with state work and this unoccupied time could be devoted to private analyses which would enable him to make a good salary with a comparatively small one from the State.

We have not attempted to mention all the needs for a bacteriologist and chemist, these are too numerous to mention here, but we will mention one that we have saved for the last, tuberculosis examination. The showing of our State with regard to the mortality from tuberculosis is excellent, and this simply means that we have not as hard a fight to make as some of the older states to overcome this dread disease. With the present knowledge regarding the means of acquiring this disease, the fact that it can be absolutely prevented, and in many instances cured, practically all instances if taken early enough, and the fact that the disease has secured only a comparatively slight foothold in our State, should make the people of Montana determined to eradicate the disease from this State. The diagnosis of tuberculosis can often be made early only by means of a miscroscopic examination. Poor people can not afford to pay for these examinations, and too frequently they are neglected in the well-to-do. A state chemist and bacteriologist could make these examinations for any one in the State and wthout cost. We need a sanatarum for tubercular patients but we can not hope for it now unless it be through the generosity of some of our well-to-do citizens, but our State, at no additional cost, could provide a bacteriologist to make sputum examinations and the early diagnosis would not only save many lives but would prevent the disease being transferred to others.

THE VALUE OF THE PEOPLE OF MONTANA.

In our various reports we point with pride to the value of our cattle, our sheep, our horses, our mines, etc. Why not place a value of our people? We have done this in a way, for we have appropriated a certain amount of money for the preservation of the health of our people and for the preservation of the health of our cattle, sheep, and horses, and according to the appropriations thus made the values of the people is placed at about 1-88 that of the value of the lower animals mentioned. Yes, we have done more than this, we have made an appropration for the protection of the health of our people and an appropriation, or levied a tax, for the protection of our fish and game and thereby declared that our fish and game are worth seven and one-half times as much as our people. Do the people of Montana believe this? But this is the estimate made by your duly elected representatives.

What is the value of a human life? To the parents the value of a child's life can not be estimated in cold dollars and cents. To the natural son the life of the old mother or father is worth more than all the cattle he owns or ever expects to own, and who dares to even consider the value of the life of a good wife to her husband? But we are a mercinary people and we have deliberately estimated the value of a human life. To do this we deliberately went to work to find what the average human being has produced over and above the cost of maintenance. These figures were collected over a long period of years and with great accuracy and the result is that a human life is shown to be worth $5,000. So thoroughly was this demonstrated that certain states placed this value on lives destroyed by negligence and this sum was usually paid without suit. It is the average amount paid today over the entire country for a life destroyed by negligence. Very frequently much larger sums are awarded for the loss of a limb, but the usual amount allowed for a life is $5,000.

However, regardless of what a jury may allow a widow for the loss of her husband, regardless of the feelings of the mother for the loss of her child or the husband for the loss of his wife, the value of an individual to the State is his earning capacity over and above the cost of maintenance, and this has been found to be $5,000 on the average. While this is the average earning capacity, and while many are an expense to the State, and others have an earning capacity of many times $5,000, we can never say in which class a child will belong. It is impossible to say that the sons of Senator Carter or Governor Toole will have a greater earning capacity than the sons of the unknown men. David B. Hill was once a news boy and Garfield drove the mules on a canal boat.

The protection of the public health implies much more than is commonly supposed. The food supply is a matter of protection of the public health. Impure food costs this state many lives every year. Note the high death rate from acute intestinal diseases during July, August and September of each year, all due to impure foods, especially impure milk, though many result from fruits and vegetables that were unfit for food. To those with whom money is "easy" the question of impure fruits and vegetables seems to be a small matter, they say "If these people would use their eyes and only buy the fresh articles they would be all right." But, my dear friends, did you ever see a mother stand at a fruit stand and gaze at it with longing eyes and wonder if she could possibly raise the money to buy a mellon for her little ones? Watch that stand and you will find that when the mellons have become soft, when decay has started, when you would not longer think of giving them to your children for food, and what becomes of them? Are they sent to the swill wagons, as they should be? No; they are "marked down," and the poor mother buys them in order to give her children a taste of the coveted fruit, and at the same time a dose of poison resulting from the products of decomposition. Follow your dairyman and you will find that he comes to your house and the houses of your associates first and to the poor last. Because you are prompt pay, you are a "good customer" and must have the milk while it is fresh and sweet, while those in the other end of town——, well, the dairyman would rather hold your custom.

But not only are these things true in the matter of foods, the same conditions exist with regard to contagious diseases. Take for instance diphtheria. This disease attacks one of your children and you say, "Is there any danger of the rest of the family getting it?" Oh, yes, but we will give each of you a dose of antitoxine and that will protect you. "Is the child in danger?" Oh yes, but antitoxine will probably save it. This antitoxine is very expensive, but what does that matter to you? You do not mind what it costs if it will save your child and prevent any other members of your family from getting it, and you even call your servants in and give them a dose because you do not want to lose them or have them sick on your hands. But what about the poor widow with numerous children when this disease appears in her family? The doctor tells her that Johnnie must have antitoxine to save his life. Well, give it to him, she says. So the doctor tells her to send to the drug store for it, and the messenger comes back with a little package marked "C. O. D. $5.00" and she has no $5.00 to meet the obligation, it is all she can do to pay rent and grocery bills. But this is not all, unless the other children and the mother are given antitoxine they, too, will in all probability contract the disease and this means a cost of from $15 to $20 to protect the family, and it is simply out of the question with the poor mother to meet the obligation. The doctor is willing to render his services and knows that he will not be paid, but he can not afford to pay for antitoxines. Antitoxines should be free to the poor of the State.

But, you say, that it is only in diphtheria that these conditions exist. Let us see. Your child is taken with scarlet fever and your house is quarantined. You have not been at home since the disease appeared, hence have not been infected. You ask the doctor if the child is in danger and he says no. You tell him to keep you posted about it, and several times each day you 'phone your house to learn how things are going, but you go to the hotel and go on with your business. What happens with the family of the poor under the same circumstances? The man of the house was away when the disease broke out. He goes home to find his house quarantined. He knows that he must stay in if he goes into the house. He goes to the doctor and is told that the child is not in immediate danger. His wages will support the family but will not support him at a hotel or boarding house and the family too. What is he to do, keep at work and use his income to support himself or go home and help his wife care for the children? In either case there will be no income to be used towards the support of the family. The poor fellow is in hard luck and you feel sorry for him. How sorry; $5.00 worth? "Not on your life;" only five words, and you consider that your business interest demands that his credit be stopped until he is able to be at work again.

This is all wrong. Every life in this State is worth $5,000 to the State. No life, rich or poor, prominent or unknown, should be endangered by the consumption of foods that are not pure. To pass a law saying that impure foods shall not be offered for sale in this State is all foolishness, unless means are provided to determine what are pure and what are impure foods, and unless officers are secured to see that foods pronounced impure are not offered for sale. This requires money. Unpaid officers are worthless, they are worse than none. Chemists are not going to make analyses for the State free of charge; the State is able to pay, and she is making a wonderfully profitable investment when she provides money for the protection of the lives of her people.

Antitoxines are expensive when bought by the individual. They are practically out of reach of the poor. Many cities and states realize this and are today supplying antitoxines free of charge to all citizens. To say that they shall be supplied to the poor only and then say that the man who, by hard knocks and strict economy, has succeeded in securing a roof over his head and is not poor because he pays taxes, will defeat the whole intention of the movement. Give us free antitoxines and let those who are able to do so pay for it but do not let one who is not able to pay with out great deprivation be deprived of it because some one who is perfectly able to pay is so small that he takes advantage of the provision.

Quarantine is a measure to protect the general public and the general public should pay for its protection. Quarantine does not in any way protect or benefit the family under quarantine. The members of that family will have the disease for which quarantine is established or they will be proven to be immune from it for the time at least. Quarantine is not established to protect those affected, but the well, and the well should pay for their protection. By this I mean that when a family is placed under quarantine it should be furnished with the necessities of life and with medical attention. I do not mean that they should be given a free hand to buy anything that they want, but that the necessities of life should be supplied. I do not mean that they should be allowed to employ any physician and run up a large bill but that it should be the duty of every county physician to offer his services free of charge to those sick of contagious disease, and he should have the authority to supply such family with such necessities of life as he may from time to time find them in need, during the period of quarantine. If any family desires to employ a physician other than the county physician they are at perfect liberty to do so, but not at the expense of the county, and when any person is able to pay for medical services they should be deemed able to supply themselves with the necessities of life, so that foods, etc., need not be furnished to such persons. At first this might appear to be a move to deprive some physicians of a part of their practice. Not so, no one who is able to employ a regular family physician will accept the services of the county physician, even though it be free whereas you will be deprived of a great deal of your charity work when the county physician is required to do this work, and you will not have to give up many obstetrical cases because you are attending a diphtheria case from which you will receive no pay.

In order that the spread of contagious disease may be prevented the health officers should be men of the highest moral character and integrity. Physicians as a rule are men of this class but black sheep will get into every profession and we do not have the disbarment actions of the lawyers. The effect of a man lax in integrity is illustrated from the following experience related by a state health officer. He was called to a certain town to see some cases suspected of having small-pox. He examined the cases at one house and found them to be small-pox, in which the county health officer thoroughly agreed with him. Wihle talking with the family, and after having told them that the disease was small-pox, one of them mentioned the fact that there was a man sick next door in just the same way as those in this house. The county health officer immediately disclaimed any such idea, saying the case next door was nothing but chicken pox. Examination showed the case next door to be undoubted small-pox, much more marked than the cases first examined. The difference was that the first cases examined were under the care of another physician while that examined second was under the care of the county health officer as a private patient. This can be overcome only by having for state health officer a man of known diagnostic ability and making him subject to call in case of dispute not only by the health officer but by any regular physician.

But the prevention of the spread of contagious diseases and the sale of impure foods is not the only function of a board of health. Sanitary matters must be considered, filth that breeds disease must be prevented. Polution of waters used for domestic purposes must be prevented. Sources of disease must be sought out and eradicated. The ventilation of school houses and other public buildings must be regulated. The sanitary conditions of elimosinary and penal institutions must be looked into and kept in proper form. Garbage must be disposed of in a manner to prevent its causing disease. The influence of occupations on the health of the people and the causes of death in the State must be looked into and studied by the collection of complete and accurate data regarding deaths and their causes.

None of these things can be done without money. Our business men realize this and proceed to secure an appropriation, either in the form of an assessment or direct appropriation or both, of $175,389.53 for the protection of the cattle and sheep industries of the State. Our sportsmen realize this and proceed to secure an appropriation, in the form of a special license tax, to protect the fish and game of the state, the amount expended for this purpose in 1905 being $17,000. But what are the lives and health of our people worth to the State. Our legislators says that they are worth just $2,000 per year, only 1-88 as much as the cattle and sheep and 1-7 as much as the fish and game.

What do other states think about these matters?

Illinois appropriates $20,360 per year for the use of her board of health, and in addition to this there is a standing fund of $10,000 for use by the board in case of an unusual epidemic, and an appropriation of $25,000 per year for use in cities of 100,000 or over.

Massachusetts appropriates $96,500 per year for her state board of health.

North Carolina appropriates $5,000 per year for her board of health.

Colorado appropriates $5,000 for her board of health, and has a standing fund of $5,000 for use by the board in case of an epidemic.

Michigan appropriates $21,000 for the use of the state board of health.

Iowa appropriates $5,000 for the use of state board of health.

Kansas appropriates $4,200 for use of board of health and has standing appropriation of $2,500 for use in case of epidemic.

Wisconsin appropriates $10,700 per year for use of the state board of health.

Ohio appropriates $20,000 per year for her state board of health.

Minnesota appropriates $20,000 per year for her state board of health.

New Hampshire provides $11,000 and clerk hire for her board of health.

Maryland provides $17,800 for her board of health.

Indiana provides $23,400 per year with a special fund of $50,000 for use in case of special emergencies.

California provides $13,300 per year and the board says this is inadequate.

Maine provides $10,500 per year with a special fund of $3,000 for use in case of epidemics.

Montana provides $2,000 per year for all the work connected with the work of preventing diseases among the people of her state, while she provided in 1905 $175,389.53 for the protection of her sheep and cattle, and $17,000 for the protection of her fish and game.

In addition to the sums mentioned above many of these states have built hospitals for the treatment of consumption. This being known to be a communicable disease the providing a hospital for those suffering from tuberculosis may be classed as a part of the preventive work of the State. In addition to providing the hospitals, special appropriations are made for their support, so that the above figures, in many instances, do not represent the entire amount, by any means, expended by the various states in the preservation of the health of the people of the State. The population of Maine is less than three times that of Montana but she appropriates more than ten times as much for the protection of the health of her people as does Montana. The population of Maryland is about four and one-half times that of Montana, but she appropriates about eight and one-half times as much for the protection of the health of her people. The population of Massachusetts is less than ten times that of Montana, but she appropriates over forty-six times as much for the protection of the health of her people.

When we ship our cattle East we expect them to bring prices equal to any. We know they are good stock, we realize this and spend money to protect them from disease. But how about our people, are they as good as our cattle, are they worth protecting from disease, are the people of Montana as good as those of Massachusetts or Maine? The people of Montana are just as good as any Bostonian that ever lived. Not a citizen of this State would permit an insinuation to the contrary; we have simply failed to realize that there is a monitary value to life, that by proper precautions many of the lives now lost can be saved, and we believe the coming legislature will give our people consideration, while the sheep and cattle will not be overlooked. We believe the coming legislature will not only appropriate enough money to prosecute the work of a state board of health, but it will pass laws that will give the board of health power to enforce regulations designed to protect the health and lives of the people of this great State.

THE 'SPOTTED FEVER" SITUATION.

In the following statement it is our intention to set forth the results of the investigations into this disease in such manner and in such terms that every citizen of the State may understand what has been done and what results have been accomplished. It is not our intention to give a scientific statement or one that will be of especial interest to the medical profession but to present the subject so that the people may understand what has been done and what to expect.

Before one can realize what has been done he must understand that the study of such a subject is of necessity a slow process and in this particular disease much slower than in some others on account of the short period during which it prevails. When it is considered that yellow fever was studied many decades before the mosqueto was found to be the bearer of the disease it will not be surprising to think that five years' work has not resulted in the discovery of the cause of this disease, especially as only about two months of each year can be devoted to the work.

During the spring of 1902 Drs. Wilson and Chowning of Minnesota were employed by the State to investigate this strange and very fatal disease. Prior to this time water analyses and other work had been done by local men but without results. Drs. Wilson and Chowning did a great deal of work and made numerous post-mortem examinations, and as a result of this work they described a germ which they found in the blood of those suffering from "spotted fever." These gentlemen made a very careful study of the disease, describing the symptoms, pathology, history, location in the valley, etc ., (giving maps showing the location in the valley), and on the whole gave a more complete account of the disease than had ever been presented to the medical profession, and thus brought the disease before the public to a great extent. As a result of their study they advanced the theory that the disease was transmitted to man by the bite of a wood tick, and that the normal host of the disease germ was the gopher, on which the wood tick lived during the winter months. That Wilson and Chowning did not consider this question settled is indicated by the following extract from their report to the State Board of Health:

"While the tick-gopher hypothesis is a very alluring one, it must not be forgotten that as yet but few facts have been obtained for its establishment. Aside from the collection of clinical evidence attempts must be made to transfer hematozoa from infected gophers by direct blood inoculations and through tick bites to various uninfected animals as the rabbit. A comparison of the results of such inoculations, if successful, with similar inoculations from human cases should give valuable data as to the identity or dissimilarity of the protozoa from gophers and those from man. In view of the high mortality from "Spotted Fever," it will probably be impossible to get any man to submit to a direct blood inoculation—or tick bite—from patients, as has been done recently with yellow fever. But it seems probable that all that is necessary may be done by careful animal inoculation along the lines here indicated." (First Biennial Report of the Montana State Board of Health, page 91.)

In 1903 the State Board of Health being without funds to prosecute the work so ably begun by Drs. Wilson and Chowning, the United State Public Health and Marine Hospital Service was appealed to, and as a result Dr. Anderson was sent to Missoula to continue the investigation. Dr. Anderson did excellent work, and while he did not contradict the tick-gopher theory he did not confirm it to the extent of practical demonstrations. His report, published in our last biennial report, does not show that he attempted inoculation or tick bite experiments on lower animals.

In 1904 the Public Health and Marine Hospital Service sent the able zoologist, Stiles, into the field. Dr. Stiles did a great deal of work in the matter of demonstrating that there was no tick common to the infected district that was not common to other parts of our State. He also studied the blood of infected persons and made a general study of the disease as he found it in the Bitter Root valley. As a result of his study he flatly contradicted the tick theory, and also stated that he was not able to demonstrate the protozoa described by Wilson and Chowning. This flat contradiction resulted in some unfortunate discussion which, while it resulted in bringing this disease before the professional world, has, we believe, retarded the study of the disease. Following this report it seemed that the tick theory had been exploded, but we call attention to the fact that the suggestions of Wilson and Chowning with regard to inoculation of animals had not been carried out, at least the reports do not show that they were attempted to any extent, if at all.

In 1905, Dr. Francis of the Public Health and Marine Hospital Service was sent into the field, but his report was entirely of a negative character. He was not able to confirm the work of Wilson and Chowning, nor was he able to present any new evidence. We do not wish to be considered as criticizing the work of the Public Health and Marine Hospital Service, but it would seem to us that more progress might have been made by returning Anderson to the field instead of sending a new man from year to year, and thus losing valuable time while becoming acquainted with the field.

In 1906, Dr. King was sent out by the Public Health and Marine Hospital Service, and at the same time Dr. Ricketts of the Chicago University came of his own volition. Drs. King and Ricketts did individual work, but it would seem that it was left to Dr. Ricketts to take up the inoculation experiments which were afterwards followed by Dr. King.

The following is a report given me by Dr. Ricketts showing the results of his summer's work in Montana:

My Dear Dr. Tuttle:—In accordance with your request of recent date, I submit to you the following report of the work I have done this spring on the subject of the so-called Rocky Mountain Spotted Fever, or Tick Fever, as it occurs in the Bitter Root valley. This report is more in the nature of an outline of the work done, rather than a report of all details.

I reached Missoula April 21st, 1906, and upon the invitation of Dr. E. W. Spottwood took up my residence in the Northern Pacific Hospital. Dr. Spottswood gave me the liberty of the laboratory and in numerous other ways has been of great help, without which the work would have been more than ordinarily difficult.

My reason for taking up the study of Spotted Fever lay in the fact that the presence of a piroplasma, which had been reported by Wilson and Chowning in the blood of infected patients, had been disputed by high authority, that is to say, by Charles Wardell Stiles, the Government zoologist. In view of this difference of opinion, held by competent investigators, it seemed to me an opportune time for a third person, who had no prejudice for or against the piroplasma theory, to take up the work. My plan was to attempt to either prove or disprove the piroplasma theory.

You are well aware that the microbes of certain diseases are very easily recognized and cultivated; that in other instances they may be found in the tissues of a patient with a microscope, all attempts at cultivation having been unsuccessful; and there are still other instances in which the causative agent has neither been cultivated nor seen with the microscope. In this last named condition the only method of determining the presence of the infectious agent in the blood or tissues is by means of inoculation into animals. Anticipating that this might be the state of affairs in relation to Spotted Fever, I came prepared for inoculation work and for the demonstration of an organism which might be ultra microscopic. I was also prepared for the bacteriologic and hematologic study of the disease.

When I arrived at Missoula a case of Spotted Fever was being cared for in St. Patrick's Hospital. I began immediately the microscopic study of the blood by means of stained and unstained specimens. I was not able positively to recognize an organism in the blood of this patient (Eldridge). This experience was repeated on all other cases which I encountered this year. The same is true of the attempt to cultivate a specific organism from the blood of all patients and from the tissues of those who were subjected to autopsy.

Having only negative results from the beginning with bacteriologic and microscopic studies, I began animal inoculations as soon as animals could be obtained. The first inoculations were made into rabbits, in which the blood from three different patients was utilized. In two of these instances the animals showed no reaction whatever. In the third case the rabbit ran a slight temperature for a few days, preceded by a brief incubation period, but recovered promptly, having showed no signs of serious illness. While different methods of inoculation might have shown the rabbit to be of some utility, the results were so doubtful that further work was concentrated chiefly on guinea pigs and monkeys.

The inoculation of the guinea pig gave encouraging results from the outset. The blood of the patient Cortsen (Dr. Merrick) was the first inoculated into guinea pigs. Following an incubation period of from two to four days the animals developed a temperature which ranged between 104 and 106 degrees, became rapidly emaciated and died, one on the seventh day and the other on the eleventh. For thirty-six to forty-eight hours before death the temperature was subnormal. A striking and characteristic development was that of hemorrhagic swelling of the scrotum, the skin of which was extensively infiltrated with blood. Subsequent experience shows that this is a specific symptom in the male guinea pig which becomes infected with spotted fever. From the first guinea pigs which died a second genration was inoculated. Of the second generation one animal died, exhibiting the specific changes; whereas the other two recovered after a course of high fever and emaciation. From that animal of the second generation which died, inoculations were made into a third generation. However, all the inoculations made into the third generation gave negative results. Cultures were made of the patient's blood before it was inoculated into the animals, and they were also made from the heart's blood of the guinea pigs which died. All of these cultures gave no growth.

As to the anatomic changes found in the animals which died, the most noticeable consisted of enlargement of the spleen, enlargement and congestion of the liver, and pronounced congestion of the kidneys, and the changes in the skin of the scrotum already mentioned. This series of experiments would seem to show positively that the infectious agent does exist in the blood stream and that the disease is not analogous to diphtheria and tetanus, in which the microbes are localized in a wound on a body surface. It would hardly be possible to assume that the guinea pigs had been killed by the toxines which were prepared in the blood of the patient. It might indeed be possible to kill the first generation of guinea pigs with toxins which were dissolved in the blood stream, but it is hardly conceivable that the two generations of animals could be killed or made seriously sick by toxines which had already killed a preceding generation.

I shall refer to the second inoculation of guinea pigs only to say that the results were identical with those of the first experiment, and shall pass to the third series of inoculations, where additional and conclusive evidence was obtained that the condition produced in the guinea pigs is an infection and not simply an intoxication.

On June 11th, blood from the patient Bradley, whom I discovered accidentally near Stevensville, was utilized party in repetition of previous experiments, but chiefly to determine the filterability of the virus and its distribution among the constituents of the blood. For this purpose a sufficient quantity of the blood was centrifugated for approximately one hour at an estimated speed of 1,500 revolutions. The serum was drawn off and six cubic centimeters of it injected into a guinea pig. An additional six cubic centimeters of the serum was passed through a Brekefeldt filter. The red corpuscles and leucocytes, which remained after centrifugation, were now freed of serum entirely, by washing several times with a sterile salt solution, and of the washed corpuscles six cubic centimeters were injected into another guinea pig. To complete the experiment the unaltered defibrinated blood of the patient was given to still another animal. I may state the results of the experiments briefly by saying that all these preparations produced fatal infections in the animals, except in the case of filtered serum, which produced absolutely no effect.

The filtration experiment removes absolutely all doubt as to the production of the disease in the guinea pig; for if it were an intoxication rather than an infection the toxines would have passed through the filter and the animal inoculated with the filtered serum would have died as the others did. The experiment would also seem to show that the microbe is not ultra microscopic in its dimensions, and it also suggests, but, of course, does not prove, that the organism is of such size that it may be seen by the microscope. This one filtration experiment hardly decides the size of the micro organism, in view of the fact that the pressure used in the filtration was rather low. A high pressure might have drawn the organism through the filter with the serum. I have, however, sufficient confidence in the result to justify me in spending more time and in devising new stains for the recognition of the micro-organism.

The experiments with the monkey have been almost equally successful, but naturally could not be so numerous because of the cost of the animal. I have inoculated monkeys from two patients. In the first instance the animal became seriously ill and ran a high temperature, but recovered. No eruption was discovered. This inoculation was made on the 20th of May. Without the confirmatory evidence which was subsequently obtained one may well question whether the disease was reproduced in this animal. At the same time it should be remembered that those who are most familiar with the disease as it occurs in man, recognize a mild type in which there is no eruption.

On June 11th a small female monkey (Rhesus) was inoculated intraperitoneally with the blood of the patient Bradley. After a brief incubation period the animal developed an extremely high temperaure, which reached 106 degrees, and died on the ninth day, death being preceded by a short period of subnormal temperature. The most pronounced symptoms consisted in marked cyanosis of the face and ear, weakness, emaciation and a brilliant erythema of the skin of the perineum. No eruption was discovered on the animal. Parenthetically it may be said that the faint pink roseolar eruption, which occurs in man, would be rather difficult of detection on the skin of the monkey· This is all the more true since, as appeared in a monkey inoculated by Dr. King, the eruption occurs chiefly on those parts of the skin which were covered by a dense growth of hair.

In order to determine whether or not the monkey was really infected with spotted fever, the blood obtained from him at autopsy was inoculated into a second monkey and also into guinea pigs. The second monkey, at the time of writing, has run a course similar to that of the first; that is to say, after a brief period of incubation the temerature mounted rapidly and remained between 105 and 106 1-2. He has lost a great deal of flesh and is extremely weak, and on his leg, thigh and buttock a pink macular eruption can be made out. The perineum shows the flaming redness seen in the first monkey. The guinea pigs inoculated from the first monkey have, with the exception of one which met an accidental death, run courses identical with those seen in guinea pigs previously inoculated. These facts taken in conjunction with the other fact that the blood of the infected animals has shown no recognizable micro-organism clearly proves the transmission of the infection.

I may refer here to a most gratifying result obtained by Dr. W. W. King, Past Assistant Surgeon in the Public Health and Marine Hospital Service. Dr. King and I, although on independent bases, have worked side by side in the laboratory of the Northern Pacific Hospital. Until June 11th Dr. King had confined himself to the microscopic study of the blood, in which, so far as he had informed me, he had been no more successful than I. Some time previously, however, he proposed that he repeat some of my animal inoculations, with the object of confirming them. To this I had readily assented, and for the purpose of his inoculations shared with him the blood of the patient Bradley, whom I had discovered accidentally in the practice of Dr. Brice near Stevensville. We drew lots for the rout of inoculation, the subcutaneous falling to Dr. King. The monkey inoculated by Dr. King died two days later than did mine and showed a marked hemorrhagic condition of the skin of the external genitalia. The flaming erythema of the perineum seen in my monkey, together with a mixed macular and confluent eruption, hemorrhagic in character, which was distributed chiefly over the external surface of the arms, legs, buttocks and back, describes briefly the condition of Dr. King's monkey. The face and ears were extremely cyanotic. No exanthema could be discovered on the chest and abdomen, as in the case of my monkey. This was a more pronounced result, a more perfect duplication of the disease as it occurs in man than I had obtained up to that time. It seems very probable that one may not expect a perfect reproduction of the eruptive condition in either the monkey or the guinea pig, in all cases. A guinea pig was also inoculated by Dr. King, with the Bradley blood, and it ran a typical course and presented the specific changes which I had already noted many times in my animals. I am, of course, pleased with the fact that the inoculations made by Dr. King so strongly confirmed the results of my own previous inoculations. It is important to say that the autopsies of the animals revealed no other cause of death than Spotted Fever; that no local infection such as peritonitis or pneumonia had been responsible for the death of the animals.

Now as to the actual importance of these experiments: They show in the first place beyond any possibility of dispute that the infectious agent circulates with the blood, wherever else it may be situated. They show also that the microbes do not have an exclusive situation in the red blood corpuscles; this being proven by the fact that the blood serum, entirely freed of corpuscles, reproduces the disease in the guinea pig. This is, of course, not absolute proof of the incorrectness of the piroplasma theory, for it is possible for the piroplasma to exist in the serum in addition to its invasion of the red corpuscles. Although my doubt as to the correctness of the piroplasma theory has been increased as the result of these experiments and as a result of my microscopic study, I am not willing at this moment to absolutely discredit the theory.

The result of this year's work to which I attach the greatest importance is the discovery of a cheap and easily obtainable animal which is susceptible to the infecton, i. e., the guinea pig. This is only second in importance, if, indeed, it is second, to the positive identification of the microbe. It furnishes a means by which the presence of the infectious agent may be recognized in the blood of the patient and perhaps in water or in the tick. The guinea pig may be in a distinct sense a diagnostic agent, an aid in the diagnosis of the disease in doubtful cases, although the tardiness with which symptoms appear in animals would render this means of diagnosis one of theoretical rather than practical importance. You can readily appreciate the value that the guinea may prove to be in the future study of the disease.

Having discovered two susceptible animals, that is, the guinea pig and the monkey, certain possibilities in the way of additional progress came to my mind immediately. These possibilities all hanging on the hope that the infection may be continued on indefinitely in the guinea pig, either by direct inoculation from one guinea pig to another, or after passage through some other susceptible animal such as the monkey. As I indicated above, the results obtained up to the present time seem to show that continuous direct inoculation of the guinea pig can hardly be accomplished. This has been tried at different times, and up to the present time I have not been able to kill the third generation of animals. It has also not yet been determined positively whether the disease can be kept going indefinitely in the monkey by direct inoculations from one monkey to another. I am investigating this at present. Another possibility which is being tried is that of maintaining the infection artificially by passing the virus alternately through the guinea pig and monkey, with the object of so altering the character of the virus that continuous direct inoculation of the guinea pig may eventually be accomplished. I may say that the present signs of accomplishing this purpose are not very encouraging.

If the plan just outlined were to succeed one might reasonably entertain hopes of being able to prepare a vaccine which could be used in the valley as a prophylactic against the disease. One might with not quite so much reason, however, hope for the production of a curative serum. I only speak of these things as reasonable possibilities. Future work must decide whether or not such things can be accomplished and it is not for you or for me to be over enthusiastic in our expectations for a specific preventive measure, or for a specific cure. I desire to be particularly careful not to raise any ill founded hopes in the minds of those who reside in the Bitter Root valley concerning the possibility of success in such matters. One can only say that the truth will be pursued, whatever the ultimate result may be.

I have thought a great deal concerning the means of transmission of the disease to man, and I have made inquiries from all possible sources and I have attempted to make some inspection, which indeed was imperfect, of the infected regions. After considering all the facts which I have been able to obtain up to the present time, I consider it impossible to differentiate between the two most probable sources of infection, that is to say, between the water supply and the bite of the wood tick. I shall not at this time enter into details which render such a position the only possible one to take. I may say, however, that the bite of the tick was present in every case, with a constancy which is ominous. I am, at present, conducting experiments which are intended to show the ability or inability of the wood tick to transmit the disease but the outcome of these experiments cannot, of course, be predicted. In view of the impossibility of fastening the transmission upon either the water or the tick, with scientific accuracy, the means of limiting the disease must apply both to the water and to the tick, that is to say, that those who live in the infected district should be advised to drink nothing but boiled or filtered water during the season in which the disease prevails, and with equal emphasis they should be advised to avoid the bite of the wood tick, and if bitten to cauterize the wound immediately upon its discovery. As to whether the State Board of Health, or the State, should take steps to aid the residents of the valley in the matter of pure water during the season of the infection, that is a question which should be left to the discretion of your Board.

I believe the results obtained this year will render possible still further progress in the solution of the problem. The experience of the year has demonstrated something, which, of course, we all knew before, that the question cannot be solved without the expenditure of time, labor and money. Your legislature will have to decide whether the lives of the inhabitants of the Bitter Root valley are worth to the wealthy state of Montana the paltry sum which, appropriated annually, would be of sufficient to carry the investigation to a final issue. I need not remind you that your legislators have no doubt as to the value of the lives of sheep, horses and cattle, and I know that it requres only an appreciation of the situation on the part of your legislators to render them still more solicitous for the welfare of the unfortunate inhabitants of the Bitter Root valley. I trust that the next session of the legislature will give you such a law and such power that you may guard the hygiene of the State with the efficiency which it demands.

I have appreciated the small degree of financial aid which the State Board of Health was able to give me this year. It is my hope to return to Missoula in the spring of 1907 to take up the study where it has been dropped this year. I sincerely hope that you will be able and will see fit to render still greater assistance next year and, if you desire, I will, at some later period, forward to you a plan for the future investigation of the disease.

In closing, I wish to express my appreciation also of the money which Missoula and Ravalli counties, through their commissioners, voted this year for the purchase of animals.

Yours very truly,
(Signed.) H. T. RICKETTS.
July 9, 1906.

Dated June 29th, 1906.

Since the above was dictated certain of the experiments have progressed and I am able to report that two monkeys, inoculated with the blood and tissues of animals which had received the blood of the patient Bradley, have developed the disease, showing the spread of the disease, showing the widespread hemorrhagic condition of the skin which is characteristic of the disease as it occurs in man. This condition has also been noted in the guinea pig a number of times. I might add also, that in a single experiment with the tick, a tick which had been infected by allowing it to feed on an infected guinea pig, produced a course of fever in a second guinea pig which it was allowed to bite; the animal recovered, however, and it is not possible to state that the disease was transmitted by the bite of the tick in this instance, the result, however, furnished sufficient ground for repetition of the experiment, with all the controls which are necessary.

H. T. R.

The following is an extract from an article in the Journal A. M. A. of August 4th, 1906, by Dr. Ricketts:

"On June 19th a small female tick was placed at the base of the ear of 'Bradley' guinea pig 1. This guinea pig had been inoculated intraperitoneally on June 11th with three cm. of defibrinated blood from the patient Bradley, and died with characteristic symptoms on June 23. After having fed on the infected guinea pig for two days, the tick was removed, placed in a ventilated pill box for two days more, and on June 23 was attached to the base of the ear of a female guinea pig weighing 300 grams. After an incubation period of three and one-half days, the temperature of the animal rose to 104.2, gradually ascending to 106.4, near which point it remained for seven days, when it gradually returned to normal. The bite of the tick in this instance seemed to be very virulent, the whole ear becoming much swollen, indurated and cyanetic, and a slough almost half an inch in diameter, which developed in the vicinity of the bite, eventually separated.

Seven days after inoculation the external genitalia became swollen and congested, and this condition became more marked until the twelfth day, when it began to subside. At no time were distinct hemorrhages in the genitalia or the skin to be seen. The course of the disease was exactly similar to that seen in a number of guinea pigs which ran a severe course, with eventual recovery. The absence of a hemorrhagic condition in the skin, or of a discoverable reseolar eruption, throws no doubt on the success of the transmission, since, as shown by other experiments, a perceptible eruption does not appear invariably in spotted fever as it is produced in the guinea pig experimentally.

It was not possible to attempt the transmission of the disease from this animal to others, because of the lack of guinea pigs at the time.

As conrols I have two experiments in which uninfected ticks fed on normal guinea pigs without causing a rise in temperature. furthermore, two guinea pigs which lived for two weeks in the box occupied by the infected animal showed no abnormal temperature, a fact which argues against the transmission of the infection by mere association with excretions of infected animals.

The result of this experiment brought very forcibly to my mind the part that the tick plays in the infection of man and shows the necessity of repetition of the work with a more abundant material.

Hasty conclusion as to the question of tick transmission in relation to the infection in man are, by all means, to be avoided until such a time as the experiments can be repeated and the life history of the infection worked out more thoroughly. This phase of the subject, in common with others, is being studied by me, the infection still being maintained in animals for those purposes.

It is hoped that some of these questions may be settled satisfactorily before the advent of the disease next year. At all events the knowledge so far gained may well be taken into account in instituting prophylactic measures against the disease.

The following is from the Public Health Reports for July 27th, 1906.

By W. W. King, Passed Assistant Surgeon Public Health and Marine Hospital Service.

"The belief that spotted fever was caused by a pyroplasma, a genus of organism carried by the tick, and the coincidence of the season of prevalence of the fever with that in which the ticks are found, suggested to Wilson and Chowning the possibility that the tick was the agent concerned in the transmission of the disease.

"The theory was extremely difficult of either proof or disproof, the fatality being too great to justify experimentation with human subjects, and until the present season none of the lower animals were shown to be susceptible to the infection.

"During the spring of 1906, guinea pigs and monkeys were proved to be susceptible to spotted fever by direct inoculation with blood from patients. The typical fatal disease was repeatedly produced by Ricketts and by myself, and I am still continuing the disease from one animal to another.

"To prove or disprove tick infection now seemed possible, and with this idea in view I placed on male and three female ticks (Dermacenter Occidentalis) on a guinea pig suffering with spotted fever. They remained until removed after the death of the animal two and one-half days later. The female ticks were but slightly enlarged.

"These ticks were taken to the Hygienic Laboratory, Washington, D. C., the male tick dying in transit.

"Nine days after removal from the first guinea pig, the remaining female ticks were placed upon a healthy guinea pig. One was killed by the guinea pig. The others remained until they dropped off after five days. Three days later the guinea pig began to show symptoms. It developed the same clinical picture as those animals inoculated with infectious blood. There was fever, emaciation, enlargement of the scrotum, very marked hemorrhagic ruption on skin of scrotum, ears, feet and back. At death two hemorrhagic spots on the scrotum were becoming gangrenous. The tick-infected pig had been kept in a separate cage, and at no time was in any contact with other animals having spotted fever. A guinea pig was inoculated with the heart's blood of the tick-infected pig. It has sickened and apparently will develop the disease.

"Whether the transference was mechanical, or whether the infecting organism must undergo a cycle of development remains to be determined, and will be the subject of further experiments. Howver, it seems conclusive that the tick is capable, under certain circumstances, of conveying the infection from guinea pig to guinea pig, whether the transmission be mechanical or biological.

"This fact is the first positive experimental evidence in favor of the tick theory, and reopens the question of this method of infection in man. At least it deserves the serious consideration of people living within infected territory."

It would appear that the work of 1906, to date, has borne much fruit. The "tick theory" is not simply reopened, it is brought to the front in such a manner that it can no longer be ignored. The experimental work certainly indicates that the **tick is able to transmit the disease under certain conditions.** The positive history of the tick bite in almost every case of the disease in man, together with the result of the experimental study, is certainly very strong evidence that the tick may be the transmitting agent of this fatal disease. While Ricketts is very conservative with regard to the results of his experiments, comparison with the results obtained in certain of his early direct inoculations certainly would indicate that the guinea pig bitten by the infected tick had the disease. King is very positive as to the result obtained in his experiment. The evidence is so strong that people living in the infected district should exercise every precaution against the bite of a tick and should cauterize the wound whenever bitten by a tick.

But this is not enough. Taking it for granted that the fact that the tick can transmit this disease will be absolutely proven by further experiments, the question arises, "Where does the tick get the infection?" It is evident that not all ticks in the infected district are infected, at least only a small proportion of them produce the disease. Having found the source of infection, ways and means must be devised to eradicate it. To accomplish these ends time is necessary, but time alone will not solve the problem—work is necessary and work cannot be secured without just compensation. Whether the work is continued by the federal government or by individual workers, or by both, the State Board of Health should be in a position to render assistance to either or both. This we cannot do without financial backing. This year we are able, by using the money that would have been used to defray the expenses of the August meeting of the board, to furnish Dr. Ricketts with two monkeys. This was magnanimous on the part of the great State of Montana. The extravagant expenditure of forty dollars to try to discover the source of a disease that claims the lives of from eight to fifteen of its citizens every year. If we cannot do the proper thing we had better do nothing. To continue this work we must have not less than

$1,500, and we should have $2,000 available in case of need. If this work is to go on, if the lives are worth anything, simply give us the money to work with.

TUBERCULOSIS IN MONTANA.

During the year ending June 30, 1906, there were 239 deaths from tuberculosis reported in Montana. This is a death rate of only 71 per 100,000, whereas the death rate for an average of the registration states was 164.7 per 100,000 during 1904. This is apparently an excellent showing for Montana in this disease, and when compared with the prevalence of other disease it is a good showing. However, let us consider conditions in this state as compared with those in the states where the death rate is so much higher than it is in ours. In nearly every state included in the registration district in 1904 the people live in thickly populated districts, large numbers being crowded together in tenement district in large cities, while even those living in the country are almost as close together as those living in the towns in our State. These conditions tend to favor the spread of tuberculosis and all other communicable diseases, and in addition they greatly reduce the chances of recovery from tuberculosis when once the disease is contracted. In our State tenement house conditions do not exist in any town except Butte, and there it is not present to the extent found in a city of the same size in eastern states. Our people, as a rule, live out of doors, and they are shut up in tight, unventilated offices all day and sleep in unventilated rooms at night. They live and sleep in the open air to a far greater extent than do the people of the east. So long as these conditions prevail the death rate from tuberculosis will be low. But these conditions will rapidly disappear. Our cities will grow, tenement houses will become more and more common, the boys will come in off the ranges and take positions in offices and stores, where the air is vitiated, and will sleep in rooms that never have a ray of sunshine in them and rarely a breath of fresh air. These young men, brought up on fresh air, will soon show the effects of this confinement, and unless precautions are taken to prevent the spread of tuberculosis, our death rate from this disease will rise like fire in tinder·

Judging from the death record, our State is comparatively free from the "Great White Plague," and the conditions for its spread are not favorable, and for these reasons we should determine that borders of our State shall be entirely rid of this disease.

During the last decade much has been learned about this disease. Are you the child of tubercular parents? Do you think that for that reason you must die of consumption? No such thing. Tuberculosis is no more inherited than is typhoid fever, it is contracted in much the same way as is typhoid. It is a communicable disease, that is the germs of the disease are taken into the system and there they gain foothold, and you have consumption. These germs do not come out of the ground, they do not grow on trees. They come from one source and one only, some person or animal who is suffering from tuberculosis. They grow in animals and nowhere else, in nature. They grow in men, and men spit them out on the streets, on the floors, on the carpets. When these men (and women and children) learn to spit only in proper places this source of the disease will be eradicated. But they grow in cows and we cannot teach cows to expectorate in cuspidors, do you say? No, but we can kill the cows that have the disease and burn them, together with their germs. How many cows would it take to pay for one human life? Not many, you say, for some. No, but suppose it is the life of your wife or your child. Oh, that is different, is it? Well, it may not be so very different after all. You are now attending the session of the legislature; you have brought your wife with you; you are going to the theater tonight; last night a man with consumption was there; he spit on the floor; the sputum has become dry; tonight the germs will float around in the air; your wife may have a cold; she may have a slight bronchitis and her lungs be in just the proper shape for these germs to get a foothold, and then what? Well, if it isn't your wife it is the wife of some other man and she is just as dear to him as "Jennie" is to you. In short, we know that consumption is not inherited, that it is communicable, and we know how it is communicated.

We know another thing about consumption that we know about any other communicable disease—that it can be prevented. We know that lightning sometimes kills people, but we can't stop the lightning; we know that consumption is communicated from one person to another, and we can stop its source. This not only can be done, but it can be done in a single generation. How? By destroying every germ of tuberculosis that is expectorated. We do not believe in the total depravity of man. We believe that when it is made clear to a consumptive that if he expectorates in any place where the sputum will become dry before it is burned that he is liable to give the disease to others, he will take proper care of his sputum, when he is told how to do this. Of course, there are a few so-called men who would refuse to go to even this slight trouble in order to save another's life, and these few must be dealt with in a manner that will make them comply with the requirements that others will observe as suggestions. In order to accomplish this it is necessary that every case of tuberculosis be reported to the State Board of Health. This is not in order that they may be placed under quarantine in even the least degree. It is not in order that they may be made the subject of public complaint. The records of consumptives reported to the State Board of Health should be made private and not open to the inspection of anyone, not even the Governor of the State. It is necessary that they be reported in order that thy may be told how to avoid giving the disease to others. In order that they may be kept quietly under observation, and if they refuse or neglect to take the necessary steps to avoid giving the disease to others they may be required to take these precautions. It is necessary that they be reported in order that a house occupied by a consumptive may be marked by the health officer, and when vacated properly disinfected before it is allowed to be occupied by another family. I do not mean that it is to be marked by being placarded, but simply that the health officer shall make a note of it and notify the agent or owner that no other family can be permitted to live in it until it has been disinfected. In order that consumptives may not be required to do all the work that is necessary, that all public buildings and railroad coaches be provided with cuspidors. It is not natural to expect the consumptive to deprive himself of all the pleasures of life. It is not natural to expect him to get up and walk to the door of the theater when necessary to expectorate, nor to the door of a railroad coach. Consumptives must expectorate, and while they will be willing to carry cloths for this purpose, to be used in private houses, etc. nevertheless they have a right to expect that cuspidors will be provided in public houses.

Some months ago we published an article on this subject in the newspapers of our State. We have received many letters on the subject and hope that some good has been accomplished. There was one subject on which we did not touch, we could not touch on all in an article of limited extent. This especial subject was touched upon in our last report and pertains to the sweeping of railroad day-coaches. Those who travel in the sleeper know nothing of the discomforts of those who ride in the day-coach. The closet of the sleeper is comparatively clean, while the closet of the average day-coach would turn the stomach of a coyote. The floors of the day-coach are covered with all kinds of filth. The tobacco chewer spits on the floor, the consumptive expectorates on the floor, and the little boy throws his peanut hulls on the floor. All this filth and trash is allowed to accumulate and become dry until the end of the division point is reached, and then here comes the brakeman with his broom. He is anxious not to lose a minute at the end of his run and he brushes this dried filth into a dust that is simply stifling, and this dust is ladened with the germs of tuberculosis. The passengers must breathe it; they cannot get away from it; they cannot get out of the car, and the law says they must not kill the brakeman. This can be avoided. It is not the theory of an impractical sanitarian. Shortly after our article on tuberculosis was published a prominent railroad man of our state met me and said, "Tuttle, your article on tuberculosis wall all right, but you overlooked one thing." On being asked what that was he brought up the very point of sweeping coaches and failing to provide them with cuspidors. I asked him how this could be remedied and he gave the very plan which we had suggested in our last report. This plan is simply this: Provide every day-coach with one cuspidor for each seat and prohibit any person spitting on the floor of the coach under any circumstances. This can be done if the cuspidors are there. Provide that no coach shall be swept until the train has stopped at the division point and the passengers given notice that the car is going to be swept and allowed to get off the train while this is in progress. This would mean that either the brakeman would have to spend ten minutes longer on duty or the sweeping would have to be done by station men. It is up to the railroad companies to say who shall sweep the cars; it is up to our legislatures to say whether they are willing to breathe this filthy dust, or to make their constituents do so, while they ride in the sleeper.

We know that consumption is communicable, we know that consumption can be cured. In the advanced stages it is doubtful if it can ever be entirely cured, but when taken early it can be absolutely cured in better than 90 per cent of the cases. This can sometimes be accomplished at home, but in the majority of cases a sanitorium is necessary on account of the home surroundings. There are "pay" sanitoria, but a sanitorium for those who cannot pay is needed badly. We cannot hope for such an institution for our State at present, we have other institutions to pay for and each of these is scrambling for additions. However, while we cannot hope for such an institution from the State it is possible that we may hope for one in the State. There are many men in the State who would not feel the loss of enough money to build and endow such an institution. We hope that some of these men will come to the front.

At present we hope that our legislators will see fit to provide the means by which a crusade against the spread of this disease can be started. This will not cost the State a single cent. All that is necessary is that tuberculosis be placed among the diseases that must be reported, and that the State Board of Health be given authority to enforce the necessary regulations for its prevention.

While this article is being written the following letter was received from the Surgeon General of the U. S. Public Health and Marine Hospital Service:

Sir:—The Bureau desires information regarding the crusade against tuberculosis in your State, and would greatly appreciate an early reply to the following questions:

1. When was the movement first started?

2. Is there a state society for the study and prevention of tuberculosis? Give the name of the society and its location.

3. Are there local and city societies of a similar character?

4. Give the names and locations of the various STATE sanitaria, public and private sanitaria, agricultural colonies, dispensaries, etc.

5. What official action has the state taken for the prevention of tuberculosis? Please furnish copies of the laws, regulations, circulars, etc.

6. Is notification of the disease compulsory?

7. Is there any special provision for the care and treatment

of tubercular children either by the state or private societies.

8. Does your board collect vital statistics of this disease?

Owing to the importance of the subject matter of this inquiry I should be very thankful, etc.

(Signed.) WALTER WYMAN,
Surgeon General.

This inquiry has been sent to every state in the union and it is probably that ours will be the only one to which a negative reply must be given to each of the questions.

Great is Montana, great are her cattle, great are her sheep, great are her mines, but her people are of very little importance, according to the present laws with regard to the prevention of disease among the people.

Contagious and Infectious Diseases.

CONTAGIOUS AND INFECTIOUS DISEASES REPORTED TO THE STATE BOARD OF HEALTH DURING THE TWO YEARS ENDING NOVEMBER 30, 1906.

In the following tabulated statements we present the contagious diseases reported to this office by the various local and county health officers. We do not pretend that these are all the diseases that occurred in the State during this time. It is evident that certain diseases are not reported at all in certain districts while in others they are only partially reported. As an illustration of this we note that Fergus county reported no cases of typhoid fever in 1905 and only one case in 1906; that Meagher county reported three cases in 1905 and one in 1906, while Yellowstone county reported 45 cases in 1905 and 96 cases in 1906. We also note that Yellowstone reported no cases of typhoid fever in either 1903 or 1904. It is not reasonable to suppose that the sanitary conditions in Yellowstone county have been so greatly reduced within a single year as to result in 45 cases of typhoid following two years in which there were none, and the people of this county assure me that that there is no more typhoid than there was two or three years ago, if as much. It is simply a clear case of failure to report two and three years ago and fairly complete reports during the last two years. The natural conditions in Fergus and Meagher counties are much the same as those in Yellowstone county, and there is no reason to believe that there is not as much typhoid fever in proportion to the population in either of these counties as there is in Yellowstone county. It will also be remembered that reports from Fergus county showed no typhoid fever in July and August of 1903, but that this board was called on to investigate an epidemic of some sixteen cases at a settlement in that county which prevailed during these months. It is simply a matter of failure on the part of the physicians to comply with the law, and failure on the part of the health officer to perform his duty, which requires him to see that these reports are made. It is a system without a head, and until all local and county health officers are made directly responsible to the State Board of Health these records will be as incomplete as they are today.

Consider the situation as regards measles. We find certain counties reporting no measles and adjoining counties reporting severe epidemics of this disease. For instance, we find that a severe epidemic existed in Cascade and Chouteau counties, while hardly any cases are reported from Valley county. How can this be? There is no natural boundary between Chouteau and Valley counties, at least none that would in any way prevent the spread of such a disease. The disease was in all probability quite as prevalent in Valley county as in either of the two counties mentioned. Again, we find quite little epidemic in Dawson county, and none in Custer county.

It is the same with other diseases. Note the valiant fight on the part of Yellowstone county to prevent infection from smallpox and the lack of effort of an adjoining county to suppress this disease within her borders. Fight as she will, Yellowstone county will continue to receive infection from another county so long as this county continues her lax measures. This condition exists between other counties in the State as well as between Yellowstone and another. Some county officials are fighting to rid their counties of contagious diseases, to protect the health and lives of their citizens, while others are pouring infection in on them. Such conditions will continue until all local and county boards of health are made directly responsible to some head board, naturally to the State board.

SMALL POX.

Reported to the State Board of Health from each County during each month of the year ending November 30, 1906.

	Dec.		Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Totals	
	04	05	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06
Beaverhead	....	....	1	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	3
Broadwater	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	2
Carbon	....	....	5	....	1	....	....	....	5	....	2	....	4	....	1	13	....	....	....	....	....	....	....	....	18	13
Cascade	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	1
Chouteau	....	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2	2
Custer	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	2	....	....	4	6
Dawson	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Deer Lodge	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	3	0
Fergus	3	....	11	....	5	....	....	....	....	....	....	....	....	1	....	4	....	....	....	....	....	....	....	....	19	5
Flathead	....	1	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1
Gallatin	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Granite	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Jefferson	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Lewis and Clark	....	....	....	....	1	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1
Madison	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Meagher	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	9	....	0	....	....	....	1	....	....	3	10
Missoula	....	....	1	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	3
Park	....	....	6	....	1	....	1	1	....	1	....	....	1	....	2	10	....	....	....	....	....	....	....	....	11	12
Powell	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ravalli	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	2	0
Sanders	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	0	1
Silver Bow	....	....	2	1	....	....	....	....	....	....	....	1	....	2	....	....	....	....	....	....	....	....	....	....	0	3
Sanders	....	....	....	....	1	2	....	....	....	....	....	....	1	3	1	15	1	4	....	....	....	3	....	....	6	28
Sweet Grass	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	0
Teton	....	....	....	....	4	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	0
Valley	....	....	....	....	....	....	....	....	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	3	0
Yellowstone	5	....	122	....	1	....	1	....	1	....	2	....	....	3	....	33	....	2	....	....	....	....	....	....	132	38
Totals	9	1	159	2	16	6	4	3	10	3	12	8	6	11	6	86	0	6	0	1	0	6	0	1	222	129

SMALLPOX IN 1905.

Smallpox prevailed more or less generally over the State during 1904, but there was no severe outbreak at any point. The cases were all of a mild type and no deaths were reported from this disease. The mild type of the disease resulted in more or less carelessness in quarantine measures and especially in the measures used in disinfecting property after released from quarantine. This meant that many people were going about with infected clothing and other articles capable of transmitting the disease. Fortunately this negligence resulted in only one serious outbreak which, however, threatened to involve the whole State, and had not prompt and energetic measures been instituted we believe the entire State would have been involved in a serious epidemic of this most loathsome disease.

This failure to disinfect persons and property and to enforce quarantine measures we attribute to two things: First, the inclination to run county affairs of this nature on cheap lines, employing the cheapest man, regardless of ability, to act as health officer, and the cheapest man possible to take charge of the pest house, and providing pest houses of such a character, managed on such filthy (and possibly immoral) lines that a man might be said to be justified in hiding a disease that would result in his or a member of his family being taken to such a place. Second, the fact that county health officers and county and local boards of health are responsible to no one. Some boards of health do good work, but this is of no avail when adjoining counties are permitted to spread infection from all sides.

SMALLPOX AT BILLINGS.

This epidemic appeared on the 4th day of January. The Secretary of the State Board of Health reached Billings January 8th. At this time the pest house, a most disreputable affair, was full to overflowing, and many cases were quarantined in the town proper. There had been a masked ball just twelve days before the first cases appeared. It had been reported that costumes worn at that ball had been shipped from another town, and that these costumes were the cause of the disease. Investigation proved that not a single rented costume was worn at that ball, every one being a home-made affair. This information was of the most importance in that it showed that this epidemic was probably of local origin, but, more than this, it relieved us of the anxiety of anticipating epidemics at other points where these same costumes might have been worn. It was a well known fact that smallpox had prevailed more or less constantly in and around Billings for the last four years. Inquiry developed the fact that several members of the fraternal order under whose auspices the ball was given had recently had smallpox, and some of them were treated at the pest house, while others were treated at their homes in the country. There was very positive evidence that the costume of a nurse, at that time employed at the pest house, was worn at the ball where the disease was spread, and the lady said to have worn this costume was one of the first to be taken sick and the first to die from the disease.

This naturally led to an investigation of the methods employed in enforcing quarantine and the thoroughness of disinfection after the disease. This proved to be the real source of the epidemic. The pest house was managed on the cheapest lines possible, without regard to ability of the physician in charge. It was not uncommon to place the entire charge of the patients and disinfection in the hands of a physician who had been unable to pass the state board of examiners. One man who had had small-pox stated that he had been released from quarantine without any disinfection whatever, taking his clothes from a nail in the room where he had been confined and where others suffering from small-pox were then confined, and simply walking away without even washing his hands. Others stated that the only disinfection received by them was being sprayed with formaline from a small hand atomizer in the open air. The disinfection of those quarantined at home does not seem to have been any more thorough. One man presented a four-ounce bottle that he said had been given him full of a clear fluid which he was told to sprinkle about the house. He stated that he did this and that this was the only disinfection given his house and his family of three.

Every particle of evidence pointed to a strictly local origin of the disease and to the fact that its spread was directly due to a total disregard for quarantine measures and absolute negligence in the matter of disinfection after this disease.

This, in a few words, is the result of the investigaton into the source of this epidemic. The report of the investigation covers many pages, witnesses being examined under oath and statements being taken down in short-hand and afterwards transcribed.

After outlining a course of proceedure the Secretary returned to Helena. On the way he learned that a case of small-pox, infected at Billings, had appeared at Livingston, and that he had been attended by his mother until the eruption appeared, when his mother left before a doctor was called, and went to Bozeman. The health officer at Bozeman was immediately notified and the woman was quarantined. In just thirteen days she came down with small-pox. This was the only case that appeared at Bozeman. On reaching Helena he learned that cases of small-pox, infected at Billings had appeared in Carbon, Beaverhead, Sweetgrass, Missoula, Teton and Silver Bow counties, in addition to the two counties, Park and Gallatin, mentioned above. Thus, in five days the disease had spread from Billings to eight counties in the State. Legislature was in session, and every condition was ripe for the spread of the disease over the entire State, and from this to adjoining states. A special meeting of the board was called and after hearing the report of the Secretary, it was decided to place the city of Billings under quarantine. In addition to placing the city of Billings under quarantine resolutions were adopted urging every local and county board of health to require all school children to be vaccinated before attending school. Many boards complied with this request, very few failing to do so, but in most instances no measures were adopted to see that the rule was enforced.

On January 10th the Secretary was again called to Billings on account of a dispute between the doctors as to the nature of a disease in a certain case. At this time he was asked, by the local authorities, to take charge of the work at Billings. Realizing that radical measures were indicated, a pest house of sufficient size and proper conveniences was rapidly constructed and, as rapidly as circumstances would permit, every person suffering from small-pox was moved into this house. A detention house was also constructed and any person exposed to the disease who had not been recently successfully vaccinated was taken there and detained for two weeks. Favor was shown to no one and in case of doubt the same measures were taken as in cases of postive exposure. Vaccination was urged and the great portion of the people of Billings and the surrounding country were vaccinated and revaccinated. A corps of disinfectors was instructed in what constituted thorough disinfection and these men worked night and day disinfecting all infected homes, public buildings, churches, theaters, halls, school houses. etc. This work resulted in the speedy stamping out of the disease and only one case of small-pox developed in the city of Billings as a result of exposure there after the first of February. One case developed in April and two in May, but these people had recently come from an infected town in another state and had not been in Billings long enough to have contracted the disease there. From the first of May, 1905, to June 17, 1906, not a single case of small-pox appeared in the city of Billings.

After the city of Billings was placed under quarantine cases originating in Billings developed in only one, Custer, county and these people got out of Billings through misrepresentation of facts. Before the city was placed under quarantine cases infected at Billings developed in eight counties of the State, so that it is fair to assume that quarantine measures protected the State from a severe epidemic of this disease.

The people who left Billings under false colors and developed small-pox at Miles City were immediately placed under quarantine by the local authorities there and after they had recovered they were indicted for breaking quarantine. The county attorney asked the attorney general for an opinion in the matter, and his opinion was to the effect that prosecution would not prove successful because of the uncertain standing of the law. This opinion has been well sustained by the supreme court decision in the Yegen appeal, in which the great portion of the board of health law is pronounced invalid.

Under existing conditions, were an epidemic of small-pox, or any other dangerous communicable disease to appear in any portion of our State, the state board of health would have absolutely no authority to take any measures to prevent the spread of such disease. The only thing we could do would be to advise the people as to the best measures to adopt but we have no authority to enforce such measures, and county boards of health are just about as helpless as the state board.

OTHER MEASURES ADOPTED TO PREVENT SMALL-POX IN THE STATE.

In August, 1905, the state board of health adopted the following rules, after having been assured by the attorney general that we had ample authority for adopting and enforcing such rules:

Rules and Regulations of the State Board of Health Regarding the Vaccination of School Children.

No child shall attend any school, public, private or parochial in this State without presenting a certificate from a physician legally qualified to practice medicine and surgery in the State of Montana, setting forth the fact that such child has presented to him evidence of a successful vaccination with cow-pox. Provided, that no child who shall present a certificate from a city or county health officer, stating that vaccination would probably be detrimental to the health of such child, shall be excluded from school on account of non-vaccination.

All teachers and school trustees are hereby required to see that no child attends any school under their supervision except in accordance with the foregoing rules and regulations.

Adopted by the State Board of Health at Helena, Mont., Aug. 1, 1905.

THOS. D. TUTTLE,
Secretary.

A copy of these rules and regulations was sent to every teacher and clerk of school boards in the State, so far as we were able to secure their names and addresses. As a rule it was enforced, but in some localities little or no attention was paid to it. However, many children were vaccinated as a result of this action and much small-pox prevented.

PAMPHLET ON THE PREVENTION OF SMALL-POX.

At the meeting of the board in August, the secretary presented the manuscript of a pamphlet on the prevention of small-pox. This was ordered printed and distributed Three thousand copies were printed; 1,500 were mailed in October· After this, requests were received for copies from about 500 people in the State, and requests came from physicians living in other states for about 300 more. These requests from other physicians were not from state health officers, but men in general practice, as health officers are supplied with a copy of all our publications at the first mailing.

Many letters were received from business men of the state expressing their appreciation of the probable good to be accomplished by such publications. We submit the following as an example of these letters.

Bozeman, Mont., December 18, 1905.

Dr. Thos. D. Tuttle,
Sec. State Board of Health,
Billings, Montana.

My Dear Sir:—The pamphlets on small-pox came duly to hand during my absence. I thank you very much for same. We are distributing them through our camps and wish to commend the publication and extend thanks for your vigilance and forethought in getting it out, appreciating the fact that too many safeguards can not be thrown around contagious diseases. Thanking you again I remain.

Yours very truly,
WALTER COOPER CO.,
Signed, Walter Cooper, President.

Such men as the author of the above letter realize what it would mean to them, from a financial standpoint, to have an epidemic of small-pox in one of their camps.

Considering the pamphlet from a financial standpoint:

These pamphlets can not be gotten out without some cost, and the question of what they are worth to the State is fairly asked. In order to answer this question the cost of a single case of small-pox must be known. Where there are several cases at a time the cost per case is naturally much less than where there is only a single case. However, we must consider the question from the cost of a single case case and the difference in the cost per capita where there are several cases is more than made up by the damage to business resulting from an epidemic or any considerable number of cases of this disease in a community.

The cost of a single case of small-pox is as follows:

Physician per day	$10.00
Nurse per day	3.00 to 5.00
Meals for nurse and patient......	2.00
Light heat and drugs	1.00
Total cost per day	$16.50 to $18.00

A case of small-pox must be confined not less than twenty-eight days, so that the cost of a single case is not less than $462.00.

These figures are based on fees commonly paid in this State and do not include cost of disinfecting or the care of those exposed to the disease. Therefore, if this pamphlet resulted in the prevention of a single case of small-pox it saved more than double its cost. Has it prevented a single case? We hold that it has, many. We hold that vaccination will absolutely prevent small-pox, and that any individual on whom vaccination takes would, if exposed before vaccination, contract the disease, therefore every successful vaccination resulting from this pamphlet is a case of small-pox prevented at this or some future time. Did this publication result in any vaccinations? Two physicians who kept a record, asking each person vaccinated if this pamphlet influenced them, found that twenty-one responded that it was through reading the pamphlet that they came to be vaccinated. This being the experience of two physicians others would have found the same conditions had they taken the trouble to inquire of their cases. In each of these twenty-one cases vaccination took so that we claim that this pamphlet in the experience of only two physicians prevented twenty-one cases of small-pox and thus saved to the community not less than $9,602. From this you can estimate for yourself the benefit to the entire State. WAS THIS PUBLICATION WORTH ITS COST TO THE STATE?

From the first of January to the first of August there were 192 cases of small pox reported in the State. From the first of August to the thirty-first of December there was only one case reported and this case was imported from another state. You say the disease stops in the warm weather. Does it? What about the nine cases in June and six cases in July, and not another case originating in the State from then until after the first of January? We hold that vaccination protected those who took advantage of it while disinfection, a necessary evil, protected the doubters.

SMALL-POX IN 1906.

From July, 1905, to June, 1906, the State was practically free from small-pox, all the cases appearing being imported or resulting directly from exposure to imported cases. In June, 1906, work was started on the railroads now building in the State and this work brought in a great many men from other states, many of whom came from other grading camps, in some of which at least, there had been small-pox which had not been properly taken care of. This resulted in infection in several camps in this State. The disease was well handled in almost every instance and as a result its spread was prevented to any great extent. However, in one or two counties the precautions taken were very superficial and as a result an occasional case appears with a history as coming from these points. We believe that great precautions must be taken this winter less men coming from infected camps bring the disease to the towns and cities of the State. The principle points of infection during the present year were in Carbon, Yellowstone and Fergus counties, and results of investigation into these outbreaks follow.

Small-pox Near Silecia.

On July 6th Dr. Souders, health officer for Carbon county, asked me to see some cases near Silecia which he had diagnosed as small-pox, but which another physician had pronounced chicken pox. Accordingly I went to Silecia and examined five cases, all of which presented typical symptoms of small-pox in a mild form. In every case there were pustules on the soles of the feet and in the palms of the hands. Every case gave a history of feeling badly, headache, fever, pains in the back and limbs, etc., for a day or two, after which an eruption appeared on the face, hands, feet and other parts of body. When the eruption appeared the symptoms became much less marked and the patient felt practically well. The cases examined were confined to three families, in each of which there were persons who had been vaccinated and others who had not. In each instance those suffering from the disease had not been vaccinated, while not one of those who had been vaccinated contracted the disease.

Inquiry brought out the fact that early in June a laborer had come from Missouri to Chilcott's ranch. A few days after going to work he was taken sick with an eruptive disease and a local physician was called in who pronounced the disease small-pox and placed the ranch under quarantine, and notified the county health officer of his actions in the matter. The next day the physician called on his patient and pronounced the disease chickenpox and released the people from quarantine, without any disinfection or other precautions. He did not notify the county health officer of the fact that he had changed his diagnosis and raised quarantine. The physician in this case was the same as the one who "managed" the cases at Lavina in July.

Working at the Chilcott ranch was a young man named Baker, who was frequently at his own home near there. About two weeks after the disease appeared at the Chilcott ranch the mother of Young Baker, who washed his clothes, was taken sick with an eruptive disease which was supposed to be chickenpox, as it was like the case at Chilcott's ranch which had been pronounced chicken-pox by a physician. Later three or four members of the Baker family were taken sick with the same disease and members of other families also contracted it, so that there must have been some fifteen or twenty cases in the immediate neighborhood, none of which were placed under quarantine. One family doubted the diagnosis of chicken-pox and took her daughter to see another doctor who confirmed the chicken-pox diagnosis, but the mother was still doubtful and called on the county health officer, notifying him that there was small-pox there. Dr. Souders immediatelyy recognized the disease as a mild form of small pox, but the other doctor having pronounced it chicken-pox felt that he needed support for his diagnosis before taking any active steps, as there was a large camp of men working on a ditch all of whom had been exposed and would have to be disinfected and kept under observation.

In addition to the five cases examined I saw four people who had recovered from the disease, and each one of these people was well pitted. The disease was in a very mild form. Chicken-pox occasionally leaves pits, but not when it is in a mild form. The cases were undoubtedly small-pox and should have been quarantined from the very first case. Dr. Souders took the matter in hand and only two or three cases developed after quarantine was established, but he writes me that he fears that there is some infected bedding in the community that will make trouble this winter.

Smallpox at Lavina.

On June 17th I received a letter from Dr. Hinderlite of Lavina stating that there was a case of small-pox at Lavina, that he had tried to get Lewistown by phone but had been unable to do so and requesting me to report the case to the county health officer at Lewistown. The case was said to be located one mile from Lavina and the doctor also requested that the matter be kept quiet on account of the effect on railroad laborers.

I immediately notified Dr. Wilson, county health officer of Fergus county, and he went to Lavina and reported the patient as quarantined.

Repeated reports came to Billings and to the county board of health of Yellowstone county that quarantine was not being observed at Lavina. At this time a good many cases of small-pox were being brought into Billings from railroad camps and all the camps in Yellowstone county had been visited and the laborers vaccinated. At the same time men were constantly coming to camps in Yellowstone county from camps in Fergus county. The county commissioners of Yellowstone county tried to get satisfactory reports from Fergus county, but were unable to do so. About this time some seven or eight cases of small-pox were reported from Meagher county on the same line of work that those reported from Lavina were employed. One of the county commissioners of Yellowstone county was at Roundup in this county and there he saw a man well pitted from small-pox. This man had just come from Lavina. He told the commissioners that he was sick at Lavina and that the doctor there said he did not have small-pox but that he, the man, knew that he did have it. This man had roomed with the man named Hall, at that time under quarantine for small-pox at Lavina. Every report received by the county board of health of Yellowstone county indicated that quarantine was very lax at Lavina and that the efforts of the county board to check the disease would prove fruitless if it was continually poured into the county from the adjoining county. Therefore the county commissioners, acting as the county board of health, requested me to go to Lavina and find just what the conditions were. Accordingly I went to Lavina on the 19th of July. I found that the man who had gone to Roundup from Lavina had been employed in the saloon at Lavina and lived in the hotel. He had told people there that he knew he had small pox no matter what the doctors said and that he had contracted the disease from a man who had it at the Smith and Elliot ranch in Fergus county. Hall, the case reported, had undoubtedly contracted the disease from this man and yet the report of the county health officer says "source of infection" in Hall's case was "unknown." Inquiry showed that quarantine was very lax in the case of Hall and that one man in particular went to the quarantine tent whenever he pleased and then went to the hotel, where his wife was employed. When I reached Lavina this man who had visited Hall was under quarantine together with Hall, who had been released by the doctor, Belcher Bros., the merchants at Lavina, being suspicious that Hall had been released too soon and believing that the other man had the disease, had placed both under quarantine. They knowing that an epidemic of small-pox would ruin their business, had taken matters into their own hands and had written to me asking that I come there the day I had left Billings. I found Hall still desquamating on hands and feet (he had been released from quarantine more than a week before) and the other man presenting the picture of a semi-confluent case of small-pox. I told Mr. Belcher to keep the men in quarantine and to call on the county health officer to see them. Mr. Belcher said that he did not want to bother with the health officer, as he would do nothing, but that if I would say the men had small-pox he would see that they stayed in the cabin and that no one went near them until such time as it was perfectly safe for them to be released. He provided them with food by placing it fifty feet from the cabin and after he had gone Hall would come out and get it.

Two days before I reached Lavina, Dr. Hinderlite had told Mr. Belcher that he did not know anything about small-pox and had left for parts unknown to Mr. Belcher. After this, one other case of small-pox developed at Lavina, which was promptly placed under quarantine and kept there for the full twenty-eight days. I demonstrated the process of disinfection to Mr. Belcher and he carried it out in every house in the town, all of which belong to him, in addition the hotel was painted inside and out and entire new furnishings provided. Everybody in the village and the men in the camp near there was vaccinated.

After this nothing was heard from the health officer of Fergus county regarding this disease and his reports would indicate that the county was free from small-pox. On the second of October Mr. Belcher, of Lavina, was in my office and told me that four cases of small-pox had come from the Reynolds camp, about fifteen miles above Lavina, to Lavina. That the first two were seen by the county health officer and that the health officer left the matter of release from quarantine and disinfecting the patients in his, Belcher's, hands. The last two cases were not seen by the county health officer, though he was notified of their presence by Mr. Belcher. In these latter cases the health officer told Mr. Belcher to bring them to Lewistown and that he would be paid $7 per day for doing so. Mr. Belcher stated, and so notified the county health officer, that he had no desire to drive over the country with small-pox patients at any price. After this the county health officer took no more notice of the cases, leaving the matter in the hands of Mr. Belcher, who is not a physician, which fact was well known to the county health officer.

These four cases came to Lavina from Reynolds camp, as stated. The source of infection was undoubtedly in that camp. The history given by the first case to appear at Lavina, which was not recognized and resulted in the infection of the others, indicated clearly that he had contracted the disease at the Smith and Elliot ranch in Fergus county. It would seem that under such conditions a county health officer, who made the least pretense at performing the duties of his office, would see that these places were disinfected. However, no report from the county health officer indicates that he even investigated the source of infection in any of tehse cases and from all that I can learn from other sources, no effort whatever has been made by the officer of Fergus county to destroy the sources of infection known to exist in his county. This simply means that the disease will be kept alive during the fall and when winter sets in these men will come to the various towns, bringing with them their infected clothing and bedding and set up numerous epidemics in the saloons and boarding houses of numerous towns. The towns can not protect themselves, the county health officer will not and the state board of health has no authority in the matter.

Small-Pox in Yellowstone County.

Yellowstone county was entirely free from small-pox from the first of May, 1905, to the 14th of June, 1906. At the latter date a case of small-pox was found who had come directly from Wyoming. After this no more cases appeared until the latter part of July and between that date and the middle of August thirty-two cases developed. Two of these cases were traced to infection at Silecia and every other case originated in a railroad grading camp, and nearly all of them were among men who had come here from Wyoming or had been in contact with men who had come from Wyoming.

These cases originating in railroad grading camps are especially disgusting. Not a single one of these cases was a taxpayer. Not one of them was a citizen of Montana. Not one of them had ever been vaccinated. The county board of health offered to vaccinate every man employed in any of the camps free of charge, but these men, who never pay a dollar taxes and become county charges when sick, refused to be vaccinated. Later the county board of health demanded that they be vaccinated or notified the contractors that in case they were not vaccinated and small-pox broke out the camp would be quarantined. This resulted in all who stayed being vaccinated, but a fair percentage of them moved to camps in other counties, there to increase the expenses of the counties by contracting the disease and never paying a dollar into the county as taxes or otherwise.

These railroad grading camps brought into our State 80 cases of small-pox during the month of July. In many instances the camps were not disinfected and these men will go into the towns this winter and take their infected bedding with them, and loaf around the saloons and cheap lodging houses, and the result is that the counties will be caring for them with small-pox, and many good citizens besides. I have urged the county board of health of Yellowstone county to notify all contractors that they must employ only vaccinated men, or that if unvaccinated men are employed and a case of small-pox appears in camp the camp will be placed under quarantine. At first they thought such a step would result in a cessation of work on the railroads building through the county. However, as the cases came in, this step was taken and the work has gone on. One man told me that it was no more difficult to get vaccinated men to work for him than unvaccinated men and that the vaccinated men were of a better class and stayed by their work better than those who are not vaccinated. The fact of the business is that the intelligent class are vaccinated while the lower classes, who could not read a page in an hour, think they know more about every subject, from law to the fine arts, than do those who have studied the subject all their lives, and are not vaccinated. The people who pay the taxes and thereby pay the expenses of the city, county and state, should have authority to say to those who do not assist in paying these expenses, "You must take such precautions as are necessary in order to protect yourself from disease and thereby lessen the expenses which we must meet." This disease costs this State an enormous sum of money each year, the cost falls on the taxpayers, and all for what? Simply for the benefit of the ignorant and the hobo class who do not pay a dollar into the State and do not benefit the State by their presence in it.

SMALL-POX IN WYOMING.

During the months of May and June repeated reports came to this office regarding small-pox in various railroad camps in Wyoming, near the State line. These reports stated that practically no quarantine measures were taken and that men were allowed to come into Montana from these camps without any disinfection whatever. The secretary was requested to go to these camps and determine what preventive measures were taken and if they were not satisfactory to take such measures as might be necessary to prevent infected persons coming to Montana. This trip would have resulted in no benefit, for while the secretary might have determined that the precautions were altogether inadequate he could not have taken any steps to prevent infected persons from coming into the State. The law authorizes the state board of health to establish quarantine against another state, but does not provide means for enforcing such quarantine. In other words, we are simply authorized to establish a paper quarantine, which would have no result other than creating hard feelings.

This lack of authority to protect the people of our State against communicable diseases originating in other States has proven rather expensive this year. There were in July and August 32 cases of small-pox in Yellowstone county, one in Rosebud county, four in Custer county and nine in Meagher county, all of which were in men coming directly from these camps in Wyoming or had been exposed to men coming from said camps. Thus 46 cases of small-pox were fostered on the people of these counties because our state board of health has no authority to establish quarantine of an effective character. During these same months small-pox was reported from several other counties, the origin of which was not determined and it is probable that the source of infection was imported, for it will be noticed that this State had been free from small-pox for over a year.

COMPARATIVELY FEW CASES OF SMALL-POX IN MONTANA NOT DUE TO A GENERAL CESSATION OF THE DISEAS .

As shown by the accompanying tables fewer cases of small-pox have been reported in Montana during 1906 than during 1905, and if the previous reports of this board are referred to it will be apparent that the disease is less prevalent now than at any time since the board was established. In 1905 most of the cases were reported and every case could be traced to infection received from imported cases.

This diminution of the disease in our State is not due to a general cessation of the disease over the country. The reports of the United States Public Health and Marine Hospital Service show that during the six months ending June 30th, 1906, there were 7,637 cases of small-pox in the United States reported to that bureau while during the same period of the previous year there were 10,647 cases reported, a decrease of about 3,000 cases, but showing that the infection continues to work and that its prevention is a matter of constant vigilance and VACCINATION.

But these figures show something else; they show that there were no cases of small-pox in Wyoming during either year, but we know that there were cases and that this State received over fifty cases directly from Wyoming during July and August of 1906. The report also shows that in Arkansas there were only nine cases during each of the periods under consideration, while durin- the same time Nebraska reported 121 cases in 1906 and 28 cases in 1905 (reports covering a period of only six months), Kansas reported 1,016 cases in 1906 and 3,528 cases in 1905; Louisiana reported 189 cases in 1906 and 259 cases in 1905. Thus we see one state reporting nine cases while other states directly adjoining it reporting a great many cases. We do not believe that this disease respects the lines that divide these states and if there were 3,528 cases of small-pox in Kansas during the six months ending June 30th, 1905, there were a great many more than nine cases in Arkansas during the same period. The same condition exists with regard to Texas, this state reporting only seven cases during the period studied in 1906, while Oklahoma reported 528 cases during the same period.

While the figures show an apparent decrease of about 3,000 cases in the periods studied the decrease in Kansas alone would account for 2,500 of these, so that there has been a very slight decrease over the country at large. At the same time we see certain states practically surrounded by the disease and yet reporting practically no cases. This simply means that no attention is being paid to the disease in these states and (here the important point to our people) that people coming from such states into ours will bring with the mthe infection. Do you believe for a moment that Montana would be free from small-pox if the disease prevailed to any great extent in Washington, Wyoming and Dakota? You know very well that it would reach us in one way or another, no matter how hard we tried to fight it. We know that with only a comparatively small area infected in Wyoming we managed to catch over fifty cases and we are very sure that if there had been 3,000 cases in Wyoming we would have caught a great many more. We also know that people have come here from Colorado, Missouri, Kansas and Nebraska, and after being in this State only a few days came down with small-pox and that in each instance we were able to elicit a history of exposure before leaving for this State.

The infection continues throughout the country and the disease is kept under control in our State only by constant vigilance. Let a single health officer become lax in his duties and the entire State is endangered. Meagher county took care of nine cases of small-pox during July and August because of negligence in another county. Being comparatively free from this disease during the winter of 1905 and 1906 the people became somewhat careless and the result became apparent at once. Note the number of cases during July and August of 1905 and 1906. Vaccination is being neglected. I do not know of but one town (there may be others) in which vaccination of school children is strictly enforced. If vaccination is neglected small-pox will get a hold in spite of all that we can do. If we are to be free from this disease we must vaccinate and be ever on our guard against imported cases.

DIPHTHERIA.

We find that there were 509 cases of diphtheria reported during 1905 and 351 cases reported during 1906, showing a decrease of 158 cases. This probably represents all the cases diagnosed as diphtheria but not all the diphtheria that occurred in the State. Diphtheria is sometimes easy to recognize, while at other times the nature of the disease can be recognized only by a bacteriological examination. The individual is not going to pay for such examinations, there is no excuse to ask him to do so. In the doubtful cases the patient is not very sick, he is possible able to be about and to spread the disease very generally; he may even be in school. Such cases as these cause our epidemics of diphtheria. In the majority of them no physician is called, therefore it should be the duty of school teachers to require pupils with sore throats to bring a certificate from a physician to the effect that the trouble is not of a contagious nature. If the throat is suspicious no physician is going to say it is not diphtheria unless he is very sure and if there is the possibility of a doubt and a prompt bacteriological examination can be had without cost to the individual, this means of positive diagnosis will be resorted to and the disease prevented. Physicians realize the danger of this disease, none of them like to treat it for they realize that they are in great danger from it, more so than from any of the other contagious diseases. Thanks to antitoxines the danger is greatly reduced today, but antitoxine is an expensive antidote and unpleasant to take, so that any physician would much rather prevent than to treat a case of diphtheria. The disease is a fatal one as shown by the fact that during the year ending June 30, 1906, there were 489 cases of diphtheria reported and that there were 61 deaths from this disease during the same period. In other words a mortality of a little more than 12 per cent. This is not bad when we think of the mortality from this disease before the use of antitoxine, but none of us care to contract a disease from which 12 out of every 100 die, if it is possible to avoid contracting it. This disease can be prevented only by free bacteriological examinations and by free antitoxine for immunization.

DIPHTHERIA.

Reported to the State Board of Health from each County during each month of the two years ending November 30, 1906.

	Dec.		Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Totals	
	04	05	05	06	05	C6	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06
Beaverhead																3			24						24	3
Broadwater						1		3		2				1				2						9	0	18
Carbon										1		1	2		5	1		3	2	1		6	1	1	10	12
Cascade	20		10	2	1		1		3		1	2	1	1	1							2		6	38	13
Chouteau	3		6		2				2												1				14	0
Custer																9		13							0	22
Dawson				1												1									0	1
Deer Lodge		25		15		10		10		8	4	8		1					2	2	14				20	79
Fergus	2		3	2	5	1															1		2		13	3
Flathead													1		4					1			1		6	1
Gallatin	5	3	8		3			1		1	3		3	5					1	2		1	3	1	26	14
Granite																	1					1		0	1	1
Jefferson											3														3	0
Lewis and Clark	7	11	5	11		14	7	2	38	1	18	2	20	1	3		3		1	3	1	1	4	2	107	48
Madison																				2		4			0	6
Meagher		1													1		5		2		6				14	1
Missoula	4		4	1	2		1	3	6		2		2		7	10	7	7	1	4	2	9	4	11	42	45
Park			1					1	9	1	3	1	6		2	5									21	8
Powell											1														1	0
Ravalli																		1							0	1
Rosebud																									0	0
Sanders																									0	0
Silver Bow	19	13	16	4	18	4	26	1	12	4	15	8	20	2	7	2	5	6	6	3	6	16	12	0	162	63
Sweet Grass							1																		1	0
Teton																				8					0	8
Valley											1													1	0	2
Yellowstone								1					2		3	1	1		1						7	2
Totals	60	53	53	36	31	30	36	22	70	18	50	23	57	11	33	33	21	32	40	23	31	40	27	31	509	351

SCARLET FEVER.

We find that there were 203 cases of this disease reported in 1905 and 207 cases reported in 1906. However, we do not believe that this represents more than a small proportion of the cases that actually occurred in the State during either year. We know that many cases were never reported and that many of those reported as "source of infection unknown" were the result of these cases that were not reported.

This disease is dangerous, not only on account of its fatality, which varies from 8 per cent to 25 per cent in various epidemics, but from its dangerous after-effects. Deafness is more commonly the result of scarlet fever than any other cause. Not only does this disease result in deafness, but the kidneys are often involved and left so damaged as to be beyond repair, so that the child is forced to face life under a handicap which could have been prevented, simply by proper laws to enforce reporting and preventing the spread of this disease. There are other evil results of this disease, but the child who is forced to go through life with a diseased or deaf ear or a defective kidney is justified in cursing the men who failed to enforce the laws or those who failed to make laws that would have prevented his contracting the disease that brought this trouble on him.

MEASLES.

What we have said of scarlet fever is true of measles. This is considered a harmless disease, and perhaps it is. However, we know that there were nine deaths from this "harmless" disease in one year, and we do not know how many children were left with diseased or deaf ears or diseased kidneys or other deformities as a result of measles, but every physician knows that there were many such results. The number of cases reported is of no consequence, the fact remains that practically no effort was made in many counties to prevent the disease. Laugh at our efforts to prevent measles, if you like, but if your baby should die from this disease the laugh would be on the other side of your face.

SCARLET FEVER.

Reported to the State Board of Health from each Cotnty for each month of the two years ending November 30, 1906.

	Dec.		Jan.		Feb.		Mar.		Apr.		May.		June		July		Aug		Sept.		Oct.		Nov.		Totals	
	04	05	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06
Beaverhead			1					2	1	2		2							2						4	6
Broadwater										1															0	1
Carbon				1				4				5				1	1								1	11
Cascade	20	16	4	9	3	4	2	5	1	3	3	5	5	2	1			3		5	2	6	2	11	43	69
Chouteau						2		3		2											1		2		3	7
Custer			3								4												1		8	0
Dawson			1															4		2					1	6
Deer Lodge								1							1										1	1
Fergus																									0	0
Flathead			15		2			1			3		3	1			4								27	2
Gallatin													1							1					0	2
Granite			1																						1	0
Jefferson							3				2		2												1	0
Lewis and Clark	1		2									7				1								1	11	1
Madison	5									3						10				12		10			5	29
Meagher						1	2		2	1	4		5		3										0	3
Missoula		3		4									1			3		1	1	3	5	2	15		37	18
Park						1		2	2				2							4					4	7
Powell						1																			0	1
Ravalli																									0	0
Rosebud																									0	0
Sanders																									0	0
Silver Bow		3	2	12		5	2	2	2	5	4	3		4	1	2	8		6		14	2	8		47	38
Sweet Grass			1		1																				2	0
Teton			4		2																				6	0
Valley		1						1																	0	2
Yellowstone				1								1				1			1						1	3
Totals	26	23	34	27	8	22	9	21	8	17	20	23	18	8	6	19	13	8	10	27	22	20	29	11	203	207

MEASLES.

Reported to the State Board of Health from each County during each month of the year ending November 30, 1906.

	Dec.		Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Totals	
	04	05	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06
Beaverhead	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	1	....	1	....	....	....	5	0
Broadwater	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	14	12	1	7	....	5	....	51	....	45	15
Carbon	....	1	....	2	....	3	....	....	....	1	....	1	....	....	....	....	....	4	....	2	....	....	....	....	0	14
Cascade	1	....	....	....	....	8	....	57	....	51	2	16	....	14	1	....	1	1	....	....	....	....	14	....	19	147
Choteau	....	....	....	....	2	....	....	2	....	43	....	98	....	6	1	3	7	....	....	....	2	....	1	....	13	152
Custer	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Dawson	....	....	....	....	....	....	....	....	....	....	....	2	15	21	....	13	....	....	....	....	....	....	....	....	15	36
Deer Lodge	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Fergus	....	....	....	....	....	....	....	....	....	....	....	....	....	8	....	....	....	....	....	....	....	....	....	....	0	8
Flathead	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	59	0	61
Gallatin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Granite	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	1	1
Jefferson	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Lewis and Clark	....	....	....	1	2	1	5	....	....	1	1	2	....	6	....	5	....	....	....	....	....	....	2	....	10	16
Madison	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Meagher	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	0	1
Missoula	....	....	....	....	1	2	....	....	....	9	....	9	....	....	....	6	....	4	....	1	1	....	....	....	2	32
Park	....	....	....	1	....	....	....	....	1	1	....	....	12	....	....	3	....	....	....	....	....	....	....	....	13	5
Powell	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ravalli	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Rosebud	....	....	....	....	....	....	....	....	....	....	2	0	2	0	....	....	....	....	....	....	....	....	....	....	4	0
Sanders	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Silver Bow	....	2	1	....	....	....	1	....	4	....	2	1	....	24	27	37	4	21	....	7	....	17	....	6	39	115
Sweet Grass	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Teton	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Valley	....	....	....	....	....	....	....	....	....	5	....	15	....	....	....	....	....	....	....	....	....	5	....	20	0	45
Yellowstone	....	8	....	3	....	6	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	10	....	12	17
Totals	1	11	1	7	7	21	6	59	7	111	7	154	20	80	35	84	24	31	9	10	8	22	42	85	165	675

TYPHOID FEVER.

This disease has prevailed extensively throughout the State. In 1905 272 cases were reported and in 1906 there were 529 cases reported. But this does not represent the full extent of the diseases in the State for either of these years. We have no reason to believe that the disease has prevailed to any greater extent during either of the years mentioned than during previous years, but it prevails to a far greater extent than there is any excuse for. This disease should be absolutely prevented. We know more about the cause of this disease, the life history of the germ that produces it and how it leaves the infected body and enters the uninfected body than we know about almost any other disease. Knowing these things there is absolutely no excuse for typhoid fever to exist in any country. In this disease we have a known, absolutely proven beyond a question, cause and effect. More than this, we know the life history of the cause, we know just how long it will live under the most favorable circumstances and we know what will kill it. We know that this cause, this germ will die out within a limited time unless renewed by fresh germs from an infected body. These germs gain new life in the body, they will live only a limited time outside of the body, but let them once become established in a human body and they multiply rapidly and are discharged from that body in condition to live another maximum term of life in nature. If every germ that leaves the body of a patient infected with typhoid fever be destroyed it follows, as does the night the day, that typhoid fever must cease. To accomplish this requires that the people be educated and to educate the people requires, time, patience and much work.

I present herewith a paper read before the Montana State Medical Association in May, 1906, and if the reading of this article induces one single physician to teach a single typhoid fever attendant to thoroughly disinfect every stool passed and the patient to care for his excreta until the germ has disappeared therefrom the matter will be well worth printing.

TYPHOID FEVER.

Reported to the State Board of Health from each County during each month of the year ending November 30, 1906-

	Dec.		Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Totals	
	04	05	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06	05	06
Beaverhead	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1	....	....	....	1	0
Broadwater	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	2	....	....	....	2	0
Carbon	....	2	....	....	...	....	....	....	....	1	....	1	....	....	....	...	....	....	5	1	10	7	2	24	17	36
Cascade	2	0	....	....	...	2	3	4	....	0	....	2	....	....	1	...	7	6	5	11	7	1	....	15	28	41
Chouteau	....	1	....	1	...	....	....	....	....	....	....	....	....	....	1	2	5	1	7	3	7	3	5	2	25	13
Custer	....	....	1	....	...	....	....	....	....	....	....	....	....	....	1	...	....	....	1	....	4	5	1	....	8	5
Dawson	....		....	1	...	....	....	1	....	1	....	1	....	1	....	1	....	15	1	6	11	2	3	....	18	30
Deer Lodge	....	....	....	....	...	....	....	1	....	....	....	....	1	....	....	...	3	2	9	....	3	....	....	....	16	3
Fergus	....	....	....	....	...	....	....	....	....	....	....	....	....	1	....	...	....	....	....	....	....	....	....	....	0	1
Flathead	....	1	....	....	2	1	....	....	....	....	1	1	1	....	1	...	1	29	2	20	1	36	....	2	9	30
Gallatin	....	....	....	....	...	1	....	....	....	....	....	3	....	....	....	...	....	2	....	2	1	7	....	....	1	15
Granite	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	0	0
Jefferson	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	0	0
Lewis and Clark	....	1	....	....	2	67	1	3	1	....	....	...	2	1	....	...	1	1	2	2	2	2	1	2	12	79
Madison	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	0	0
Meagher	....	....	....	....	...	....	....	1	....	....	....	1	....	....	....	...	1	....	....	1	2	1	....	....	3	4
Missoula	....	....	....	....	...	....	....	....	....	2	....	....	1	....	3	...	6	1	9	7	13	7	3	4	35	21
Park	....	1	1	....	...	....	....	....	....	....	....	1	....	2	....	...	3	....	1	2	4	2	1	....	10	8
Powell	....	....	....	....	...	....	....	20	....	6	....	....	....	....	....	...	....	2	....	10	....	....	....	....	0	38
Ravalli	....	....	....	....	...	....	....	....	....	....	....	....	....	1	....	...	....	....	2	....	2	....	....	....	4	1
Rosebud	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	16	3	4	....	....	....	20	[illegible]
Sanders	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	0	0
Silver Bow	....	....	....	....	...	....	....	2	....	....	....	1	....	1	5	1	5	1	1	6	3	3	2	....	16	15
Sweet Grass	....	....	1	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	1	0
Teton	....	2	....	2	...	1	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	1	....	1	5
Valley	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	2	....	....	....	2	....	1	....	....	0	5
Yellowstone	....	8	....	3	...	4	....	8	....	2	....	2	....	1	....	4	7	14	25	25	4	15	9	10	45	56
Totals	2	17	3	7	4	76	4	40	1	12	1	13	5	8	18	8	39	76	86	100	81	90	28	59	272	529

TYPHOID FEVER FROM THE STANDPOINT OF A SANITARIAN.

Read Before the Montana State Medical Association at Butte, May, 9th, 1906

At the very outset of this paper let me say that, in the matter of the seriousness of typhoid fever in Montana, I am not one of those who believe that this is not a fatal disease in this locality, that I do not agree with the editor of the Montana Daily Record (the managing editor of which is a prominent physician) who, in discussing the epidemic at Hauser Lake, said in effect, "this is a disease which never assumes a serious aspect in this locality." When I first came to Montana I noticed that many of the physicians looked on this disease lightly and considered it much less fatal than in many of the eastern states. In talking with physicians generally over the State I found this to be a very common impression. I believe this impression to be erroneous and am prepared to demonstrate that either this disease is more prevalent in our State than it is in many of the eastern states or that it is just as fatal here as it is in the eastern states. In the study of this subject I have taken into consideration the fact that many cases of typhoid are not reported. This is the case in many of the eastern states as well as in ours. In order to study the subject properly I have not considered the number of cases reported at all, but simply the number of deaths in each of the states, and studied and estimated the death rate per capita in each state. In this way it makes no difference how many cases of typhoid existed, the mortality per capita is the only question considered and this is determined by the death reports and not the contagious disease reports. These figures prove one of two things, either typhoid fever is more prevalent in Montana in proportion to the population than it is in other states or else it is quite as fatal as it is in other states.

The first of last May I undertook to secure a complete report of the deaths in this State through the undertakers. I wrote to every undertaker, to every firm that sold coffins and to every man who made boxes to bury the dead, of whom I could learn, and without exception these men have sent me promptly each month the data regarding deaths for which they furnished coffins or boxes. I realize that there are quite a number of deaths in isolated districts of which I have no record, but these are comparatively few.

In regard to the following figures I wish to state that the years are not selected but represent the latest year for which I have a report from the state board of health. In the matter of population I have used the census figures of 1900, in order that there might be no question of over estimated population, and finally, Montana has been given the advantage at every point. I know personally that two cases were reported as having died of hemorrhage of the bowels and yet the contagious disease reports showed that they had typhoid fever, but neither of these, nor any other except those reported as having died of typhoid, are used in these figures. In addition to this the figures for Montana represent only eleven months, May 1, 1905, to March 31, 1906.

Per Capita Death Rate From Typhoid Fever.

LOCALITY	Population	Year Studied	Number Deaths	Death Rate per 100,000
Connecticut	908,355	1903	207	23.0
Massachusetts	2,805,346	1902	469	16.8
Michigan	2,420,982	1901	615	26.0
New Jersey	1,883,600	1903	388	21.5
Ohio	4,157,545	1904	1,521	37.0
Pensylvania	6,302,115	1902	1,083	17.2
Rhode Island	428,566	1902	91	22.7
Vermont	343,641	1903	87	23.4
Dominion of Canada	278,718	1903	104	52.0
Philadelphia	1,293,697	1902	588	45.3
Baltimore	508,957	1904	199	39.8
Montana	243,329	1905-6	76	38.0

In estimating the death rate I have used only the hundred thousand decimal, as it is not necessary to figure it down to the last decimal in order to demonstrate my point. These figures prove that the per capita death rate from typhoid fever for eleven months in Montana was actually greater than in any of the other eight states studied. These states were not selected because of a low death rate from this disease, each one of you know that not one of these states has any such reputation. In addition to the states studied I have presented the figures for three cities, counting D. C. as a city, which it is practically. Both Philadelphia and D. C. are known to be badly infected with typhoid fever. Philadelphia is spending large sums of money on this account and if we had her figures for 1905 they would undoubtedly be much lower than those given. Baltimore is selected as one of ordinary conditions in the matter of typhoid fever, and yet her death rate per 100,000 is only 1.8 less than that of the State of Montana. You may claim that these figures show that typhoid is more prevalent in Montana than in either of the eight states studies or you may claim, as I do, that the disease is more fatal in this State, but which ever horn you take hold of the sensation must be the same. It makes no difference whether the disease is more fatal in Montana than it is in other states or whether it is killing more people because of its greater prevalence, the point to be considered is, what are we, as physicians, doing to prevent these deaths, to prevent the disease?

Typhoid fever in Montana is rarely due to the infection of the water supply of any city or town. We rarely have an epidemic. Most of our cases are isolated. The large epidemics of the East are given great prominence, but I doubt if, in the long run, as many cases result from such epidemics as do from other sources. In this connection I will quote two prominent gentlemen. Dr. Victor C. Vaughn, the only surviving member of the commission who investigated the epidemic among the soldiers of the Spanish-American war, says: "I formerly held the view that 95 per cent of the typhoid cases were transmitted by drinking water and as a teacher, had so instructed my classes for years. I now believe that the spread of the disease is largely by personal contact and under conditions maintained in military camps personal contact is responsible for the spread of the disease in about 66 and two-thirds per cent of the cases. (Address before the Third Annual Conference of Health Officers with the Public Health and Marine Hospital Service, May 15th, 1905.)

Dr. J. O. Cobb says: "Sporadic cases of typhoid fever in country settlements are more often the result of fly infection than of water infection." (Ibid.)

We know more about typhoid fever from a sanitary standpoint than any other communicable disease. We know the exact germ which causes the disease without which there can be no typhoid, we know how it leaves the infected body and how it enters the uninfected body, we know under what conditions it grows most rapidly and at least some of those which retard its growth, we know how long it will live under various conditions outside of the body and what will kill it. Knowing these things what are we, as physicians, doing to prevent the disease?

The typhoid baccillus is both hard and easy to destroy. It is hard to destroy in the sense that it requires a temperature of from 140 degrees to 167 degrees F. to kill it, while freezing has apparently no effect on it. It is easy to kill from the sense that direct sunlight destroys it in from 14 to 24 hours, though diffused sunlight has a much less prompt effect on it. It will live in the soil, protected from light, for from five to eight months and in a dried state from eight to eleven months. In water the life of the germ is very variable, depending on many conditions, the chemical and biological constituents and the physical conditions of the water, all tending to prolong or shorten the life of the germ. In waters of certain chemical constituents the life of the germ has been found to be much shorter than in distilled water, while certain water bacteria (non pathological) are known to retard the growth and to destroy the typhoid baccillus. If the water is still the life of the germ is much longer than in active or flowing water. In a well or stream with a mud or dirty bottom the life of the germ is longer than in the same well or stream with a clean bottom. On vegetables and fruit these germs have been demonstrated to live for various periods, depending, in a large extent at least, on the conditions in which the foods are kept. In milk they not only live but multiply rapidly, and, what is more unfortunate, they do not effect the milk, that is the milk does not curd or become sour or give any other gross evidence of the presence of this deadly germ. Under no condition in nature has the typhoid fever germ been demonstrated to live as long as one year, and it naturally follows that a fresh infection must occur at least once in every twelve months in order that the disease may persist.

This, in a few words, is the life-history of the typhoid baccillus outside of the body. Now let us consider how it leaves the body.

As it is my desire to deal with this subject from a practical standpoint only, we will consider only two routes by which the ger mleaves the body, namely the urine and faeces, though we must not overlook the fact that competent observers have demonstrated this germ in the sputum and vomited matter.

Since the earliest demonstration of this germ its presence in the stools has been recognized, but it is only in recent years that its presence in the urine has been demonstrated in from thirty to forty per cent of the cases examined. These facts have been demonstrated beyond a doubt and have been admitted by all competent observers, but the question of how long these germs will persist in the stools and urine of the patient after he has recovered from the symptoms of the disease has not been settled. Some observers claim to have found them present weeks, months and even a year after the patient has recovered. The subject has not been given sufficient study and when demonstrated it is doubtful if the information will be of any practical value, for it is very probable that it will be found (as in the case of diphtheria) that each individual is a law unto himself, and the only method of determining when the excreta is free from these germs is by bacteriological examination, an impractical proceedure under present conditions in our State.

To the question, "How do these germs gain entrance to the human body?" the almost universal answer would be, "They are taken in with food and enter the system through the glands of the small intestines, chiefly through Pyers Patches." This is certainly true in the vast majority of cases, but recent postmortem examinations have produced quite a number of cases in which people have died of undoubted typhoid fever, the germs being found in the blood, the spleen and other vicera, in addition to the symptoms of the disease pointing clearly to typhoid and germs having been demonstrated in the stools, but in which there was no evidence of any disease of the intestinal tract, at least none on microscopic examination. (I do not recall having read of an instance of this kind in which microscopic examinations were made of the intestinal mucosa.) In addition to this we not infrequently meet with typhoid fever patients who were first attacked with bronchitis, the bronchitis appearing some time before there were any symptoms of typhoid. These cases naturally bring up the question, "Is it not only possible but probable that a small percentage of the cases are infected through the lungs, the germs being taken in with infected dust and finding their way into the blood are carried to the seat of election in the system?" However this may be theoretically, it has not been proven, and we will immediately proceed to the consideration of the means by which the germ gains admission through recognized routs.

Water has long been recognized as a bearer of this disease. So often has an infected water supply (or ice) been demonstrated to be the cause of an epidemic of typhoid fever that we are inclined to "give up" when the water supply has been found to be free from contamination. The question to be considered is not "May typhoid be carried by water?" but how may the water become infected, and, as we are dealing with isolated cases and not epidemics, how may the individual water supply become infected? We may disregard the question of city sewage and come direct to the question of seepage and surface drainage. A well or spring becomes infected through one of these two routs. How far the typhoid germ will travel with water through the ground must depend, to a large extent at least, on the porosity of the ground. In an open soil it would naturally travel much faster and therefore farther than in a compact soil. We know that the germ will live for from five to eight months in the soil, and an object so small will naturally be carried by water no small distance in the course of such a time, no matter how compact the soil so long as the water will penetrate it. Hence it is folly to say that a well situated 50, 100 or 1,000 feet from a closet could not have become infected from that closet.

How far surface drainage will carry these germs it is impossible to say, the character of the water, rapidity of the flow, exposure to sunlight, presence of water bacteria, etc., all having an influence on the life of the germ, and hence the distance which it would be carried alive by surface drainage.

Irrigating ditches, the source of domestic water supply for so many of our people, are usually infected in the same manner as wells, though some people are so inconsiderate as to place their closets over irrigating ditches.

Milk, so often demonstrated as a bearer of this germ, is infected by man and does not receive its infection from the cow. It has never been shown that cows have typhoid fever, and the germ has never been demonstrated in milk taken absolutely pure from the cow's udder. Man infects the milk with dirty hands, with dirt allowed to fall into the milk, or with water used to wash the vessels or to dilute the milk. A very slight infection will go far in milk, as the germs multiply rapidly in this medium. Churning does not kill them and butter made from infected milk is just as dangerous as the milk.

Foods may become infected in a variety of ways. Dust infected with typhoid baccilli may fall on them, the hands of those who handle them may be infected, flies bearing the germs may walk on them, or the plate on which they are served may be infected.

The hands of those who handle food may become infected in a variety of ways, and the average loaf of bread passes through many hands. It has been demonstrated that many nurses and doctors have contracted typhoid fever through failure to wash their hands after handling the patient or his excreta. For these people I have no sympathy, they know better and were it not for the danger of others becoming infected from them I would say "good for them." But the danger does not stop with them, the careless nurse or physician handles the typhoid patient, infects his or her hands and wipes them on a towel. This infected towel goes to the kitchen and is there handled by the cook, who in turn handles (probably without washing her hands) all the food served. The towel is then sent to the washerwoman, who handles it probably before eating her meal, possibly the children handle, and—well, another water supply is inspected and another case, probably several cases, of typhoid are reported as "source of infection unknown."

Flies as bearers of disease germs are not given sufficient consideration. Bacteriological examinations have demonstrated over and over that disease germs are present on the feet and and legs and in the excreta of the common house fly. But what need is there for bacteriological examination or any other proof of such an evident condition. Go into any closet and see the flies swarm over the mass and if there is anything in the germ theory of disease you know that these flies have typhoid germs on them if there is a typhoid stool in that closet.

Fruits and vegetables become infected from dirty hands, by being sprinkled with infected water, by flies and by infected dust.

Oysters are known to disseminate this disease, they being infected while being fattened in fresh waters near the mouths of sewers. The fattest, juiciest oyster is the one fattened in water richest with sewage. But this need not warry the people of our State, as the oysters we receive are so treated with preservatives that even the typhoid baccillus refuses to live in them.

Dust as a bearer of this disease is not given proper study. Repeated experiments have shown that the typhoid baccillus lives longer, under ordinary circumstances, in the dried state than in other. This infected dust may be taken into the system in several ways. It may be taken in with food or drink, or it may be inspired and become lodged in the pharynx or mouth and then swallowed. Typhoid fever is quite common among men working on railroads. In the majority of instances the infection is attributed to the water at one point or another. This may be the case in some instances but not in all. A patient suffering from typhoid, or recently recovered, uses the car closet. The excreta falls to the track and is quickly ground into dust which is inspired by the railroad employes as well as the traveling public, and men working about the cars at division points get their hands covered with this infected dust and introduce it into their systems with a chew of tobacco or other objects put into their mouths.

These are some of the means by which typhoid fever is spread and may account for most, if not all of the isolated cases. A casual consideration of them shows each means of spreading the disease to be a matter of filth. The bird that fouls its nest is considered a revolting object, but how about man, that thinking animal, who fouls his drinking water? The filthy and dishonest dairyman infects his milk with polluted water, the filthy nurse or doctor infects towels and sends them to the unsuspecting washerwoman who handles soiled clothes and, without washing her hands, proceeds to eat her meal; and the filthy cook, after handling soiled clothes, proceeds to prepare a meal without washing her hands. Railway companies scatter filth along their tracks and have it splashed against the floors of the cars instead of providing a receptacle that could be removed at each division point. All simply a matter of FILTH.

What Can We Do?

Possibly there is present some one who is devoting his time and energy to the study of bacteriology. If so, I say God bless him and God help him, for bacteriologists are the most patient and hardest working men in any science, and are the poorest paid of any class of labor, skilled or otherwise. These men by their patient diligent study have taught us much about many diseases. As a result of their work we know positively that typhoid fever is due to a certain baccillus and to that alone; we know how long and where this germ will live, and under what circumstances it will flourish; we know what will kill it; and we know how it leaves the infected and enters the uninfected body. All this is of vital importance, but what use have we, as medical men, made of this information? Is the death rate from this disease reduced because of this knowledge? Is the course of the disease shortened or the symptoms ameliorated because of this information? That the death rate has been reduced needs no support, but is the cold bath treatment in any way a result of bacteriological study? We have been able to determine that certain epidemics resulted from the presence of this baccillus in water or milk, and proved it by demonstrating the presence of the germs in the suspected fluids; but our grandfathers knew that if they drank certain waters or milk during an epidemic of typhoid they would get the disease, so that all we have done is to show this generation why our grandfathers avoided certain articles of diet and by so doing avoided typhoid fever.

Let us use a practical comparison. I doubt if as much is known about electricity today as is known about typhoid fever, certainly no more; but to how much practical use the knowledge of one and to how little the knowledge of the other is put. A house is being wired and a careless workman leaves a wire exposed, resulting in a death or a fire. The contractors are made responsible and they in turn go after the workmen. Investigation will show that the man who actually left the wire exposed was under the supervision of another whose duty it was to see that the work was properly done. In such a case is the workman or the superintendent mostly at fault? That the workman should have done his work properly I freely grant, but the superintendent is supposed to have superior knowledge and I hold that he and he alone was at fault in that he did not detect and remedy the defect, that is what he was employed for. How does this apply to medicine? In just this way: I ask you, gentlemen, in all candor, do not we, as physicians, occupy precisely the same position towards our typhoid fever nurses or attendants that the skilled superintendent does toward the unskilled workman, and if we permit the stools, urine or other articles bearing typhoid baccilli to be disposed of in such a manner as to cause the spread of the disease are we not just as guilty of negligence as was the skilled electrician? This is not idle talk; I am profoundly in earnest, and I believe that the physician who deliberately endangers human life or permits it to be endangered, knowingly, is not entitled to the name of doctor—no, not to the name of man.

With the knowledge we possess regarding the life history of the typhoid baccillus this disease should be absolutely within our control. We know that under ordinary circumstances the life of the typhoid germ is less than one year, so that if the fresh supply developing in the system of those suffering from the disease be absolutely destroyed then the disease should be eradicated. This is the theoretical result. Practically, if very physician exerted his utmost influence to secure the total destruction of all germs from every patient under his care the disease would become less and less common, until, after many years, it would be as rare as smallpox in a well vaccinated community.

The physician is, or should be, a teacher. He is very careful to give implicit instructions as to diet, bathing, temperature, ventilation, etc., and frequently spends much time in explaining to his attendants why these things must be done in the particular way he describes. It is just as much the duty of a physician to direct the disposal of the excreta, and if necessary demonstrate what constitutes proper disposal, as it is to see to the diet of his patient. To tell the attendant to be careful with the excreta is absurd; full and implicit instructions must be given. To tell them not to throw the excreta out except at a point below the level of the well is equally absurd, as the well may be infected by seepage unless the excreta is deposited at a point below the level of the bottom of the well, and at that point a neighbor's well may become infected or flies may carry the germs in all directions, to say nothing of the travel of infected dust. It seems to me that it is asking little when people are instructed to put milk of lime or a small lump of quick lime in the stools and keep it covered for a few hours before throwing it out or into the sewer or closet. This simple proceedure would do away with the most fruitful source of typhoid fever. The importance of personal cleanliness on the part of the attendants should be fully explained, as well as that every article, from a towel to a teaspoon, taken from the sickroom should be placed in boiling water, and that the hands of any one touching such an article should be thoroughly washed before touching any article of food. That all flies should be excluded from the sickroom, and as far as possible from the house. This entire matter can be fully explained in less than half an hour, and when explained by the family physician it will have a wonderful effect, whereas, if a health officer, unknown to the family, undertakes the work it will have but little effect. I venture to assert that there is not a man present who would refuse to devote several hours trying to save the life of the lowest bum run over by a street car, though he knew the chances of success were small and the possibility of receiving compensation for his services was out of the question. Then why hesitate to devote half an hour in instructing the attendants of your typhoid patients? Are not the lives of those who dies of typhoid fever of value? Do you say the disease is not fatal in this state? Never mind how many cases were reported, we know many of them were not reported, and we know that there were 76 deaths from typhoid in our State during the last eleven months, and more than this, we know that certain cases which died of typhoid fever were reported as having died of other diseases. All these men and women who died of typhoid were in the prime of life and it is worth an effort to save such lives.

After the patient has recovered he continues to discharge the baccilli for we do not know how long, and this should be impressed on him, together with the importance of using the greatest care to deposit his excreta only in places where it will not be accessible to flies or reach a water supply.

People living in the country or small towns where water closets and wells are used should have explained to them that if the closet is located at a point above the level of the bottom of the well the seepage from the closet will enter the well, and as few if any closets are located at such points, all closets should be provided with watertight boxes. In addition to this each closet should be provided with a small box of lime or dry earth and a shovel, and the mass covered with the lime or earth at least once each day.

Finally, the people must learn that filth is at the bottom of typhoid fever, and that sunlight is the most deadly enemy to the germ of this disease; therefore, that a clean yard, clean house, clean person and plenty of sunshine will finally eradicate this disease. If the water is not infected milk will not be infected, neither will vegetables. If horse manure is removed and put on the garden or field, where it will do good, flies will be greatly reduced in numbers. If our small towns (some of them not very small) would keep their streets and alleys clean and require the people to keep their yards and barn yards clean and let the sunshine in typhoid fever baccilli would find short rations.

All these things are practical, and as soon as the medical profession of this State are ready to show the people that our germ theory of disease is not all "hot air," by teaching them how to destroy the known germ of this disease, then will typhoid fever be overcome in our State and then, and not till then, can the physicians of this State say "We have saved lives." We may say it now but we do not know it, we do not know whether our patients get well on account of or in spite of our treatment. Therefore, gentlemen, I appeal to you to prove to the people of this State that our germ theory, of which we are so proud, (we are all proud of the work of our bacteriologists), is a germ fact of practical use, by teaching them how to free this State of a disease of which so much is known and so little practical use made of the knowledge.

THOS. D. TUTTLE, M. D.

Billings, Montana.

EXTRACTS FROM ANNUAL REPORTS OF LOCAL AND COUNTY HEALTH OFFICERS.

Only those portions of reports containing matter of general interest not included in the body of this report have been used.

BEAVERHEAD COUNTY—CITY OF DILLON.

I herewith submit the following report of communicable diseases and other matters concerning the health of this city.

There was no county board of health organized here during this year and on that account there was no county health officer.

The city board of health was reorganized in May and a report of such reorganization transmitted to the State Board of Health.

The city board of health adopted rules regarding certain communicable diseases, a copy of these rules being attached to this report.

During the last year the city has established a sewer district and all privy vaults and cesspools in that district have been abandoned after first cleaning out, disinfecting and filling up.

The public school here has abandoned, cleaned out and filled up their privy vaults, and now uses inside, automatic flushing closets with cesspool.

The physicians of Dillon have been very prompt in reporting to me the communicable diseases coming under their care, and have also been very diligent in enforcing the quarantine rules and regulations. It is with great pleasure that I acknowledge the great assistance the members of the medical profession have rendered to the city board of health and the cheerfulness with which they have given us aid in both counsel and work.

Respectfully,
W. V. KINGSBURY,
City Health Officer, Dillon, Mont.

CASCADE COUNTY.

Herewith my annual report from October 1st, 1905, to October 1st, 1906.

During this period there have been reported to me as secretary of the Great Falls and Cascade county boards of health the following communicable diseases:

Smallpox, 2 cases, probably percentage reported, 100 per cent.

Diphtheria, 5 cases, probably percentage reported, 100 per cent.

Measles, 161 cases, probably percentage reported, 70 per cent.

Scarlet fever, 50 cases, probably percentage reported, 90 per cent.

Typhoid fever, 27 cases, probably percentage reported, 90 per cent.

Tuberculosis, 4 cases, probably percentage reported, 90 per cent.

Health conditions throughout the county have been very satisfactory, as is evidenced by the small number of cases of communicable diseases.

The greatest difficulty I have encountered as county health officer has been with regard to the sanitary conditions of the town of Belt. Early in June I notified the people of that town to clean their premises. This order was generally ignored, and I was powerless to enforce it by means of our ineffective State Board of Health Law. This being the case, the county attorney advised me that there was a statute which provided against maintaining nuisances. The county board of health then directed me to prepare notices, like the one herewith attached, to be served by the sheriff and the proper returns made by him. This has had a good effect, for a great many property owners have cleaned their premises. However, there will be some prosecutions started within the next few days for neglect or refusal to obey these notices.

Copy of Notice.

Great Falls, Mont., August 31, 1906.

To ...., Belt, Montana.

You are hereby notified to remove from your premises, ... within twenty days. If you refuse or neglect to obey this notification the County Attorney will be requested to bring action against you for maintaining a nuisance.

By order of the Board of Health of Cascade county.

Respectfully submited,

LEROY SOUTHMAYD, M. D.,

Secretary Great Falls and Cascade County Boards of Health.

CHOUTEAU COUNTY.

Chinook, Mont., Oct. 1, 1906.

Gentlemen:

I respectfully submit the report of the Chouteau County Board of Health, from October, 1905, to October, 1906.

There has been reported to this office eighteen cases of typhoid fever; fifteen were in the fall of 1905, three in 1906, one Chinook, one Benton, one Havre. Since the installation of the water plant in Havre typhoid has nearly disappeared.

Ten cases of scarlatina during the year, two near Chinook, seven at Havre, one at Zortman. In the cases near Chinook exposure could not be traced. The case at Zortman came from a mission school near Great Falls. Havre cases not fully traced, probably imported.

Only one case of smallpox during the year; that was at Chinook and came from North Dakota. One case of diphtheria in Havre in October, 1905; fatal.

In March, 1906, measles became epidemic throughout the county, brought in via Great Falls. The disease spread rapidly. Schools were exposed, especially in Fort Benton. About 190 cases were reported from Benton, 50 from Havre, 10 from Harlem, 6 from Chinook, and there were many cases never seen by a physician and not reported. Quite a number of parents made reports.

The colls upon the health officer have not been many. October 5, Havre, diphtheria; Oct. 14, Havre, quarantine; Dec. 4, Coal Banks, scarlatina; Feb. 20, 1906, Paradise Valley, suspect smallpox; March 21, Havre, scarlatina; March 26, Havre, scarlatina; April 28, Havre, measles and scarlatina; May 11, inspecting streams and order removal of dead animals.

The winter of 1905-6 was mild, spring fine and very dry. Heavy rains early in summer, streams were well flushed and lakes filled. Prevailing winds from the west.

Answers to questions by Secretary State Board.

Follow profession of physician.

Health officer receives $10 per day and mileage when on business connected with that office.

Ten dollars for monthly reports.

Think nearly all cases of communicable diseases reported.

Smallpox, 100 per cent.

Diphtheria, 100 per cent.
Scarlatina, 100 per cent.
Measles, 90 per cent.
Typhoid fever, 90 per cent.

Respectfully submitted,
C. F. HOPKINS, M. D.,
Secretary Chouteau County Board of Health.

CUSTER COUNTY.

Miles City, Mont., Oct. 1, 1906.

Sir:—I have the honor to report the following cases of infectious diseases in Custer county for the year ending September 30, 1906:

Smallpox, 4 cases.
Diphtheria, 22 cases.
Scarlet fever, 1 case.
Measles, no cases.
Typhoid fever, 5 cases.

The office of health officer is not combined with that of county physician. Compensation for routine duties as health officer is $75 per annum, extra duties receive additional compensation. During my presence I believe practically all cases of infectious diseases were reported, because I went after the reports. I do not believe that during my absence my substitute kept efficient records.

Very respectfully,
L. C. BRUNING,
County Health Officer Custer County.

DAWSON COUNTY.

The sanitary conditions of Glendive are poor. Cesspools, closets, restaurant and hotel refuse are not taken care of well. Typhoid fever, however, has come mostly from down the river, where a poorly arranged camp on the government irrigation ditch gave rise to the epidemic.

Measles were epidemic because the cases were not reported and did not observe quarantine when they were reported. The number of cases of communicable diseases in Dawson county were as follows.

Typhoid fever, 43 cases, 50 per cent reported.
Measles, 36 cases, 20 per cent reported.
Scarlet fever, 6 cases, 95 per cent reported.
Diphtheria, 2 cases, 100 per cent reported.
Smallpox, no cases.

R. E. HATHAWAY.

DEER LODGE COUNTY.

City of Anaconda.

Anaconda, Mont., Sept. 30, 1906.

Dear Doctor:

I think reports of contagious diseases were made by the members of the profession very promptly and faithfully.

My position is practically that of health officer alone, as the work of the city physician is done by the county physician, who is under contract to do the work of the county and that includes practically all of the city work. For performing such duties I receive the sum of $300 per annum.

Cases reported:
Diphtheria, 98 cases.
Typhoid fever, 8 cases.
Scarlet fever, 3 cases.

Yours fraternally,

O. C. EVANS.

(We call attention to the fact that not a single case of measles was reported in Deer Lodge county, whereas quite a number of cases were reported in Butte and Silver Bow county. We can hardly conceive of a large number of cases of measles existing in Butte and none in Anaconda when the relations between the people of the two cities are so intimate.)

FLATHEAD COUNTY.

Kalispell, Mont., Oct. 1, 1906.

Dear Doctor:

With the exception of typhoid, Flathead county has had but few cases of communicable diseases during the past year.

Typhoid has been present in all parts of the county for the past two months, but it is of a mild type and there have been but few deaths from the disease. The cause of the epidemic has not been discovered, as there has been a lack of funds for that purpose.

The sanitary condition of towns and villages has been found satisfactory throughout the year.

I believe all cases of smallpox, diphtheria and scarlet fever have been reported. Probably but a small percentage of the cases of measles has been reported, as many families do not employ a physician for the treatment of these cases. Probably 80 per cent of the typhoids have been reported.

Yours truly,
MORRIS W. BOTTORF,
Secretary Flathead County Board of Health.

(If there were an epidemic of any kind among the sheep and cattle of Flathead county would there be a lack of funds to locate and eradicate the disease? No, the sheep and cattle are worth something, but the people are not worth anything.)

MEAGHER COUNTY.

The general health has been much the same as in previous years, very few cases of contagious diseases occurring among the residents of the county. The cases that have occurred have been chiefly in grading camps and among a floating population.

Each case of smallpox or typhoid fever that has occurred this fall has been in the railroad camps or directly traceable to them. Their sanitary conditions are not of the best and their water supply is often bad, but notwithstanding these drawbacks the health of the men is generally good.

Lax quarantine measures in other counties were responsible for our outbreaks of smallpox here, but thus far we have succeeded in preventing any spread of the disease. An effort was made to hide a case of smallpox in one of the grading camps, but the camp was afterward qarantined, the case removed, and the superintendent placed under arrest. Since then I believe all cases have been reported.

Probably several cases of measles have occurred in the county that have not been reported, but aside from that the report is fairly accurate and complete.

HARRY B. TICE.

MISSOULA COUNTY.

City of Missoula.

Missoula, Mont., Oct. 1, 1906.

Dear Sir:

I have the honor to submit the following report as Secretary of the Board of Health of Missoula for the year ending Oct. 1, 1906.

The general health of the community has been excellent for the past year, and, while the number of deaths and births may be considered excessive for a city with a population of 8,000, this condition is brought about by the fact that there are two large hospitals located here which receive patients from various points outside of the city of Missoula.

The streets, alleys, yards, cesspools, etc., are under the direct supervision of the Health Marshal and Street Commissioner, whose entire time is devoted to their care, and, while we have experienced some difficulty in getting a few of the elite to keep their back yards clean, on the whole the citizens in general have been very prompt in removing anything that might become a menace to the public health.

The water supply for the city is taken from the Rattlesnake river, which has its source of origin in the uninhabited mountains to the north and east of Missoula, and as there are only a few dwelling on the river above the point of intake, with a little care on the part of the water company the water can be kept free from any infection.

There has been no time during the past year when the city has been entirely free from infectious diseases. This is due to two reasons: First, as Missoula is considered a medical center we have a large number of cases coming here for treatment from the Flathead Reservation and from various parts of Missoula, Ravalli, Powell, and Sanders counties. Very often these cases prove to be diphtheria or scarlet fever. Again, I have reason to believe that cases of diphtheria and scarlet fever have existed during the past year, and still exist, in the city of Missoula, in families who are either ignorant of the true nature of the sickness or who are trying to avoid being quarantined and consequently do not call a physician. I have investigated a large number of cases of sickness and have found a few cases of diphtheria and scarlet fever, which were promptly quarantined. So far we have not been able to trace any new cases of diphtheria or scarlet fever to the cases which were under quarantine. On the whole the people under quarantine have observed the regulations of the board of health. We have had a few instances where the people quarantined thought themselves mightier than the law, but a police officer at their doors for a few days promptly dispelled the illusion.

The city board of health has been promptly seconded by the council in anything that pertained to the health of the city. I am pleased to announce that the city council has appropriated a sum of money to establish a bacteriological laboratory, which will be in working order in a few days.

The office of health officer is combined with that of city physician, the compensation for both being $300 per year.

In my opinion all communicable diseases which a physician was called to attend were reported.

In addition to the above report I wish to make the following recommendations. That the method now in vogue of reporting deaths and births so that the reports may go through the secretary of the local board of health to the secretary of the state board of health. Under the present system it is an impossibility to get the reports complete. Physicians do not care to be burdened with a lot of extra work in getting the necessary data, making out a long report and filing it with the clerk and recorder. I would suggest that the data required be printed on a postal card which can be carried in the obstetrical bag of the physician, who will make it out and mail it to the secretary of the board of health, who will consolidate the reports and send them to the secretary of the state board once a month, the same as the report for infectious diseases. Further I would suggest that the state board furnish blank books to each subordinate board for the purpose of keeping their records, thus making the work complete and uniform throughout the State.

Very respectfully,

F. D. PEASE,

Secretary Missoula Board of Health.

(We call attention to the fact that the city of Missoula, Silver Bow and Cascade counties are the only reports that say a word with regard to any efforts being made to secure sanitary conditions in the yards and alleys within their jurisdiction. What is the result? Typhoid fever is not completely reported, but we can judge from the death reports as to its prevalence in a locality. We find that Silver Bow county, including the city of Butte, has a low death rate from this disease, and we find the same to exist with regard to Missoula. The death rate from this disease in Silver Bow and Missoula counties is smaller than for any other district in the State with the same number of people. In addition to this a great many cases of typhoid fever are sent to the railroad hospital at Missoula, and these cases cause an apparent increase in the deaths from typhoid fever credited to Missoula which in reality should be credited to points from all over the State. On visiting Missoula one is struck with the cleanliness of her wards and alleys. In other towns the opposite condition prevails, and you will hear strangers remarking on the filthy and unsanitary conditions that are permitted to exist in many of our cities. These conditions are not always the fault of the health officer, one of whom told me that he had brought the matter before his board and had been instructed to take the necessary action to get the conditions remedied. He immediately filed a complaint against a prominent citizen of the town, thinking that a successful action against him would result in the smaller fry taking notice and acting accordingly. The action seemed to hang fire. He went to the city attorney, who referred him to the mayor, and this "lord of the land" suggested that the health officer be cautious in creating antagonism among the people of that class. The health officer saw that he must either be a figurehead or resign, and he did the honorable thing, resigned. If Missoula can enforce a clean alley and clean yard ordinance so can all the other towns, but will they? We simply know that they do not.)

ROSEBUD COUNTY.

Rosebud county was very fortunate this year. Very few cases of communicable diseases in the county, and these were looked after promptly and so thoroughly as to prevent any spread whatever. One case of smallpox in a sheep camp near Forsyth, I discovered came from a railroad camp around Cody, Wyoming, over which, it appears, there was not even any kind of a quarantine placed. Two other cases, I believe, coming from the same place but not yet broken out, remained over night in a camp on the Milwaukee railroad, but proceeded on out of the county before being reported. As soon as known I placed the camp under quarantine and no cases developed. Now here are three cases where our county might have been deluged with smallpox, costing the county many thousands of dollars, and still be no fault of ours. Could something not be done to remove, to a certain extent, this danger?

So far as I am aware cases of communicable diseases have all been reported. Sanitary conditions generally in our county are good. In Forsyth as yet we have no water or sewer system, and for sanitary reasons we need them very much. The wells are kept in as good condition as we can expect, considering the mixed population generally found in the west and the difficulty experienced in convincing people of the importance of such things.

The office of health officer and that of county physician are entirely separate, although I happen to hold both. I receive $75 per year for doing the clerical work of the office, that is for making out the various reports, and for any other work done I am paid extra for. For instance, if it is necessary to make any calls to determine the nature of a suspicious disease, or to quarantine or to treat an infectious or contagious disease, I am paid extra for it. This I think a very fair method, and seems to work very satisfactorily, at least in this county.

Respectfully yours,
A. C. WILSON,
Health Officer, Rosebud County.

SILVER BOW COUNTY.

Butte, Mont., Oct. 3, 1906.

Dear Doctor:

I herewith submit my annual report of the contagious cases in Silver Bow county for the year ending Sept. 30, 1906. This report includes all cases in Silver Bow county, exclusive of the city of Butte, which comes under the jurisdiction of Dr. T. J. Sullivan, health officer of the city of Butte. The report of births and deaths in the county will be included in the report of Dr. T. J. Sullivan, since for the sake of order this work in done through his office.

This report shows no real epidemic of any contagious disease during the year, although smallpox was quite prevalent during the month of July, 15 cases having been reported that month.

You can judge of the sanitary work of the office by the fact that during the last five months, the length of time present sanitary officer has been in power, 1,125 feet of storm and box sewer have been installed, and 300 notices to clean yards, vaults, etc., were served.

The office of health officer is not connected with that of county physician and the health officer receives $1,200 per year. This office has every reason to believe that all cases of diphtheria, smallpox and scarlet fever were reported. On account of the very active campaign of Dr. T. J. Sullivan in this matter, the physicians are realizing that they must report their cases of measles, and during the last year I think there were very few of such cases not reported. Only two cases of typhoid fever were reported to this office during the last year, while we have reason to believe that there were many more of such cases in existence, though it is very difficult to locate them.

(This report includes a complete tabulated statement of all contagious diseases reported, but at this is included in our report we give only the totals.)

Scarlet fever, 30 cases, 4 deaths.
Diphtheria, 19 cases, 4 deaths.
Measles, 17 cases, 1 death.
Smallpox, 25 cases, no deaths.
Typhoid fever, 2 cases, 1 death.

Yours truly,
J. B. SULLIVAN, M. D.

City of Butte.

I send you today annual report of births and deaths in the city of Butte, and in response to your request for a general statement regarding the prevalence of communicable diseases and sanitary conditions, will say that there has been considerable improvement, owing to the campaign of education the Butte Board of Health has been carrying on for the last two years. We find it much easier to abate unsanitary conditions and control contagious diseases as the people learn that our efforts are entirely for the public's good.

With regard to percentage of communicable diseases reported during the year, would estimate as follows: Smallpox, 98 per cent; diphtheria, 95 per cent; scarlet fever, 100 per cent; measles, 50 per cent; typhoid fever, 75 per cent.

Respectfully submitted,
T. J. SULLIVAN, M. D.,
City Health Officer.

(The report of births and deaths is not submitted here, as all the facts with regard to deaths are included in the report under vital statistics, and as there is no data regarding births in other parts of the State this data for a single city is omitted.)

VITAL STATISTICS.

The very foundation of sanitary work is the study of vital statistics. In our sanitary work we have had to depend on the vital statistics of other states. Our state has no law by which vital statistics can be obtained. This lack of vital statistics for our locality has resulted in much supposition and guess-work. The impression undoubtedly prevails in the minds of most of our citizens and even among many of the medical profession that contagious diseases are not as fatal in this State as they are in many of the eastern states. Another impression that seems to prevail is that pneumonia is more fatal in our State than it is in other states, especially those with a lower altitude. To attempt to change these ideas without absolute figures would do no good whatever, but if we can show by absolutely accurate data that these diseases are just as fatal in Montana as they are in any other state, and that pneumonia is no more fatal in Montana than it is in Illinois, or any other state, then the people will be more ready to comply with requirements intended to prevent the spread of communicable diseases, and those who may be taken sick with pneumonia will not be frightened to death.

In 1905 the secretary undertook to collect data regarding the deaths in this state. He had tried to secure this data from the physicians and had failed to accomplish any reliable results. This time he undertook to secure it from the undertakers. He wrote to every undertaker, every merchant who sold coffins, and to every man who made boxes to bury the dead in this State, whose address he could secure, and asked them to give him simple data regarding every dead body for which they furnished coffins or boxes. To send each of these men blank forms and depend on them to send in a report each month would have resulted in receiving reports from less than half of them. The only reliable method was to ask them each month for a report, and this was done. As a result we believe that more than 90 per cent of the deaths that have occurred in this State during the last year have been reported, and we are thus enabled to refute the statement that communicable diseases are less fatal and that pneumonia is more fatal in Montana than they are in other states. These facts are set forth in the following tabulated statements and under the various contagious diseases.

While these figures are accurate as far as they go, there is much information that should be given in the report of a death which the undertaker cannot secure, at least which we do not feel justified in asking him to secure when there is no law requiring him to make these reports. The occupation of the deceased is of the greatest importance in the study of vital statistics for the purpose of making use of them for sanitary work. How long the party lived in this state or in the particular locality is of importance. The causes of death of parents is also an important matter. This can be appreciated by any one as important in the study of tuberculosis. These and other items of importance should be included in the report of a death.

In supplying the simple data asked for from the undertakers it was frequently necessary for them to go to no slight trouble in order to secure it. For instance, some one telephones from a distant point asking the undertaker to send a coffin for an adult man about six feet tall. The undertaker asks the man telephoning what the man's name is. He replies that he does not know, the man worked for John Smith. He asks what he died from and again the reply is, "Don't know; Smith asked me to 'phone in when I passed his house on the way to town." In several instances the undertaker has gone to the expense of calling up people on long distance telephone to secure this information, while in other instances the mails have been depended on, but, with very few exceptions, the undertakers have secured this information.

The illustration used in showing the difficulty experienced by the undertakers in securing data regarding the cause of death also illustrates a very lax point in our laws. Smith has asked

Brown to 'phone for a coffin for his hired man. Brown does not even asked what the man died from, but even had he asked it would have been a simple enough matter for Smith to have given an swer that would have satisfied Brown and not caused any suspicion, while the hired man may have been murdered. Another illustration: Smith and his wife are living together; they hire Brown to work for them; shortly after this Smith dies, the widow sends Brown for a coffin, and Brown says Smith died from pneumonia; was only sick a day. Shortly after the funeral Brown and the widow marry but not soon enough to cause any suspicion. Smith may have died of pneumonia, or he may have died of something in his coffee. Again, an undertaker is notified to send a coffin to a distant point for an infant. He asks what the infant died from and the reply is "natural causes." Is it not possible that the so-called natural cause was in reality the most unnatural cause known to man?

No body should be buried without a certificate of death signed by the attending physician. When no physician is in attendance the coroner or health officer should be required to investigate the facts with regard to the cause of death and, if necessary, hold an inquest. "Natural causes," "heart failure," and other meaningless causes of death should be prohibited; no body should be buried unless the cause of death as given is in accordance with the classification adopted by the United States Census Bureau. It is no disgrace to admit that you do not know the cause of death, but to try to cover ignorance with such meaningless terms as "heart failure," "natural causes," etc., is foolishness.

The registration of births is an important matter. This subject was dealt on in our last report. At present there is practically no registration of births in Montana. There is no way by which the State Board of Health can secure any data whatever regarding births in this State, and until there is a law requiring the immediate registration of births and it is made the absolute duty of some one to see that such law is complied with births will not be recorded.

It is made the duty of the State Board of Health to "collect vital statistics," and this we have done as far as possible, but unless the law gives us some means by which this data can be secured we must be content with such data as we can secure from those who realize the importance of such data and who are willing to go to some trouble in order to furnish it.

The following tables show the result of collecting data regarding deaths for one year. The importance of such data is evident from the fact that it contradicts many delusions regarding the seriousness of certain diseases that prevail in our State.

The importance of proper registration of births and deaths is appreciated by the leading men of our country as shown by the following resolutions adopted by both houses of Congress February 11th, 1903.

Whereas, The registration of births and deaths at the time of their occurrence furnishes official record information of much value to individuals; and

Whereas, The registration of deaths, with information upon certain points, is essential to the progress of medical and sanitary science in preventing and restricting disease and in devising and applying remedial agencies; and

Whereas, All of the principal countries of the civilized world recognize the necessity of such registration and enforce the same by general laws; and

Whereas, Registration in the United States in now confined to a few states as a whole and the larger cities, under local laws and ordinances, which differ widely in their requirements; and

Whereas, It is most important that registration should be conducted under laws that will secure a practical uniformity in the character and amount of information available from the records; and

Whereas, The American Public Health Association and the United States Census Office are now co-operating in an effort to extend the benefits of registration and to promote its efficiency by indicating the essential requirements of legislative enactments designed to secure accurate vital statistics, to be presented to the legislative authorities in non-registration states, with the suggestion that such legislation be adopted; Now, therefore,

Resolved, By the Senate and House of Representatives of the United States of America in Congress assembled, That the Senate and House of Representatives of the United States hereby express approval of this movement and request the favorable consideration and action of the state authorities, to the end that the United States may attain a complete and uniform system of registration.

Approved February 11, 1903.

The United States Census Bureau has issued a special mortality report for the five years ending with 1904. This report is a most valuable document. It, however, places the United States in a false position when compared with other countries, in that it does not represent the conditions as they exist in the United States. It represents conditions as they exist in a fair proportion of the large cities, but outside of the large cities the conditions represented exist in only ten states. That is, the data is collected from only ten states, and while these ten states may fairly represent the conditions existing in other states, it is no more right to assume that they do than it would be to assume that conditions existing in Mexico represent the conditions existing in the United States. This condition is not the fault of the census bureau. The census bureau can secure this data only through the state officials, and it so happens that only ten states had laws through which this data could be secured. Several other states will be included in the next report, they having enacted registration laws since the above mentioned report was compiled.

In order that the data from any state may be used in this report it is necessary that such state shall have laws requiring the registration of deaths and shall possess records affording satisfactory data in necessary detail. In other words, the state must not only have such a law, but the law must be enforced. To pass a law requiring the registration of births and deaths and not provide for its enforcement would accomplish nothing.

TABLE
Showing Deaths by Counties, Arranged According to Sex

COUNTIES	General Disease...		Diseases of the Nervous System and Organs of special sence		Diseases of the Circulatory system.		Diseases of the Respiratory system..........		Disease of the Digestive system.		G. U. System....
	M	F	M	F	M	F	M	F	M	F	M
Beaverhead	4	4	1	1	2	....	4	1	....	1	....
Broadwater	1	2	....	....	....	....	....	0	0	2	1
Carbon	8	6	....	1	....	....	1	....	5	1	1
Cascade	20	32	9	8	5	6	16	6	17	9	5
Chouteau	14	11	4	1	....	2	4	4	10	3	1
Custer	4	5	2	1	2	1	2	....	....	....	3
Dawson	5	2	....	2	2	....	1	....	5	1	3
Deer Lodge	27	19	31	11	20	3	23	7	8	3	11
Fergus	7	4	....	....	....	2	14	6	5	4	....
Flathead	11	11	5	3	5	3	10	11	7	4	1
Gallatin	8	7	8	5	3	4	14	10	2	6	5
Granite	4	3	1	4	1	....	2	1	....	1	....
Jefferson	7	3	3	7	1	3	4	4	2	2	2
Lewis and Clark	31	11	3	6	9	3	8	4	9	7	6
Madison	7	2	1	1	4	....	2	4	6	2	5
Meagher	5	5	3	....	1	1	1	1	2	....	1
Missoula	33	28	13	5	5	1	11	5	22	17	9
Park	10	7	7	1	1	....	6	4	8	2	6
Powell	5	2	2	2	1	....	3	....	....	3	2
Ravalli	15	5	3	2	....	2	1	3	6	4	1
Rosebud*	...	....	....	....	....	....	....	....	....	....	....
Silver Bow	149	62	30	19	39	19	108	61	43	45	26
Sweet Grass	6	5	3	2	....	1	....	....	1	3	....
Teton	4	5	6	0	3	1	2	....	1	2	....
Valley	2	3	....	....	....	1	2	4	3	2	....
Yellowstone	25	9	2	1	4	2	6	2	6	3	5
Totals	412	253	137	83	107	54	252	142	108	127	93

1.

and General Classification, for the Year Ending June 30, 1906.

Diseases of the	Pueaperal State...		Disease of the Skin and Cellular Tissue......		Diseases of Organs of Locomotion ...		Disease of Infancy		Diseases of Oid Age.........		Deaths from External Causes		Deaths fuom Ill-defined Causes...		Totals.........		Grand Totals. ....
F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
...	....	....	....	....	....	....	4	1	....	....	7	......	5	1	27	9	36
2	....	....	....	....	....	....	....	....	....	....	5	......	2	......	9	6	15
...	....	....	....	....	....	....	1	4	3	2	13	3	1	3	33	20	53
6	....	3	....	....	....	....	12	7	3	....	26	2	8	10	121	89	210
...	....	1	....	....	....	....	2	2	2	1	6	......	4	3	47	28	75
2	....	....	....	....	....	....	....	....	1	....	6	1	2	......	22	10	32
...	....	....	....	....	....	....	3	4	....	1	5	......	......	2	24	12	36
2	....	2	....	....	....	....	12	7	1	1	16	2	6	5	155	62	217
...	....	....	....	....	....	....	2	4	2	....	6	1	9	5	45	26	71
2	....	2	....	1	....	....	5	2	4	....	18	3	4	2	70	44	114
1	....	1	....	....	....	....	7	3	1	....	9	......	5	3	62	40	102
...	....	....	....	....	....	....	1	2	7	2	3	......	5	......	24	13	37
...	....	....	....	....	....	....	....	....	4	1	10	......	4	......	37	20	57
2	....	....	1	....	....	....	....	4	2	....	16	2	8	1	94	40	134
3	....	1	....	...	....	....	2	2	5	2	9	1	5	2	46	20	66
1	....	1	....	....	....	....	2	....	8	1	2	......	3	2	28	12	40
3	....	1	....	....	....	....	6	4	9	7	36	4	19	14	163	89	252
...	....	....	....	....	....	1	9	4	4	....	15	4	6	2	72	25	97
1	....	....	....	....	....	....	....	....	2	3	3	1	5	3	23	15	38
3	....	1	....	....	....	....	2	3	3	1	4	4	15	16	50	45	95
...	....	....	....	....	....	....	....	....	....	....	......	......	......	......	......	......	....
14	....	2	....	....	....	1	29	20	14	12	99	22	5	3	542	280	822
...	....	....	....	....	....	....	2	1	1	....	5	3	......	4	18	19	37
...	....	....	....	....	....	....	1	....	....	....	3	......	1	......	22	8	30
...	....	....	....	....	....	....	3	1	....	1	5	......	2	......	17	13	30
2	....	....	....	....	....	....	4	....	1	3	16	1	5	4	74	27	101
45	....	16	1	1	....	2	109	75	77	37	343	54	129	85	1828	974	2,802

TABLE II.

Showing Deaths by Sex for Each Month During the Year Ending June 30, 1906, Arranged According to the International Classification of Causes of Deaths.

	July		Aug.		Sept.		Oct.		Nov.		Dec.		Jan.		Feb.		Mar.		Apr.		May		June	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
I.																								
GENERAL DISEASES.																								
Typhoid Fever	7	....	7	1	5	4	9	1	5	2	4	2	1	1	3	....	19	5	6	....	6	....	1	....
Small-pox	....	....	...	....	....	....	....	....	....	....	....	1	....	...	....	....	....	....	....	....	....	....	....	....
Measles	....	....	...	2	1	....	....	....	1	....	....	....	....	...	....	....	....	1	1	....	....	3	....	....
Scarlet Fever	....	....	...	1	....	1	1	1	1	1	....	....	1	2	....	....	....	1	....	1	....	....	....	1
Whooping-cough	....	....	2	2	3	....	2	....	....	....	....	1	3	1	2	2	4	9	8	5	6	5	1	1
Diphtheria	4	2	...	1	2	1	3	5	1	4	1	2	5	4	4	3	5	1	4	3	2	1	1	2
Grippe (Influenza)	....	....	...	....	....	....	....	....	....	....	....	....	....	2	....	1	....	....	....	1	....	1	....	1
Spotted (Tick) Fever	2	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	4	1	1	2	....	....
Erysipelas	....	....	2	....	....	....	....	....	1	....	....	....	1	...	....	....	....	....	....	....	3	....	....	1
Purulent Infection and Septicaemia	1	....	1	3	2	2	....	....	2	6	2	1	....	1	2	2	2	3	....	3	....	6	....	3
Tubercle of the Lungs	11	6	9	6	8	3	15	....	17	5	16	8	9	7	11	7	10	7	16	6	12	9	14	7
Tubercle of the Meninges	1	....	...	1	....	....	....	....	....	1	1	....	....	...	....	....	1	2	....	....	1	1	....	1
Syphilis	....	....	...	....	1	....	....	....	....	....	....	....	1	1	....	....	....	1	1	....	1	....	1	....
Cancer of the Stomach and Liver	3	2	3	....	2	1	4	....	2	1	2	1	....	3	1	1	....	3	3	....	5	1	2	1
Cancer of Peritoneun and Intestines	....	....	...	....	1	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Canecr of Female Gen. Organs	....	1	...	....	....	....	....	1	....	1	....	1	....	...	....	....	....	....	....	....	....	....	....	....
Cancer of the Skin	1	....	..	....	....	....	....	....	....	....	....	....	....	...	....	1	....	....	....	....	....	....	....	....
Cancer of organs not specified	2	2	1	1	1	1	1	1	....	1	1	1	1	2	....	2	....	2	1	3	1	2	2	2
Rheumatism, Acute Articular	....	....	...	....	....	....	....	....	1	....	....	....	1	...	1	....	....	....	....	....	....	....	2	....
Rheumatism, Chronic and Gout	1	....	...	....	1	....	....	....	1	....	1	....	1	...	1	....	....	....	....	....	....	....	....	....
Diabetes	....	....	1	1	....	....	....	2	....	....	....	1	....	...	1	....	....	....	[illegible]	....	....	....	....	....
Anaemia and Chlorosis	....	1	...	....	....	....	....	....	....	1	1	....	1	...	....	2	....	....	....	....	4	....	....	....
Alcoholism, Acute and Chronic	4	....	1	....	1	....	2	....	5	....	4	....	2	...	3	....	2	....	....	....	....	....	1	....
Saturnism (Lead Poisoning)	1	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....

II.																								
DISEASES OF THE NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE.																								
Encephalitis	....	....	1	....	....	....	....	....	....	....	....	....	....	...	....	....	....	1	....	....	....	....	1	....
Meningitis, Simple	1	1	1	2	3	3	....	....	3	1	1	4	5	1	2	2	5	4	2	2	4	1	3	3
Cerebral Congestion and Hemorrhage	2	....	...	1	2	....	4	2	....	....	....	1	6	...	3	....	1	....	1	2	....	....	3	....
Cerebral Softening	....	....	...	....	....	....	3	1	....	....	....	....	....	...	....	....	1	1	2	....	2	....	0	2
Paralysis, General	1	....	6	1	3	2	7	1	2	2	1	3	3	3	3	3	1	3	....	....	3	....	1	1
Other forms of Mental Alenation.	....	....	...	....	....	2	....	1	2	....	2	....	1	2	1	....	1	....	....	1	....	2	....	....
Epilepsy	1	....	2	....	....	1	1	....	1	....	2	....	1	...	1	....	2	....	....	....	2	....	....	1
Convlusions of children	1	....	1	....	1	1	1	3	1	2	1	....	2	2	2	1	1	1	1	....	1	....	1	1
Chorea	....	1	...	....	....	....	....	....	....	....	....	1	....	...	....	....	....	....	....	....	....	....	....	....
Tetanus	2	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Other Diseases of the Nervous System	2	4	2	....	....	....	....	1	....	....	....	2	....	2	1	....	....	....	....	....	....	....	....	....
Diseases of Eye and Adinexa	....	....	1	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Diseases of the Ear and Adinexa	....	....	...	....	....	....	....	....	....	....	....	....	....	...	1	....	....	....	....	....	....	....	....	....
III.																								
DISEASES OF THE CIRCULATORY SYSTEM.																								
Pericarditis	0	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	1	....	....	....	....	....	....	....
Endocardities	5	1	2	....	3	2	2	3	6	4	2	1	1	1	4	....	4	6	5	1	5	5	1	6
Other Diseases of the Heart	2	2	4	4	2	2	3	3	3	1	5	4	7	2	8	2	2	....	5	....	5	1	1	....
Diseases of. Arteries (Atheroma Aneurism)	1	....	...	....	....	....	....	....	1	....	2	....	1	...	....	....	1	....	....	....	....	....	3	....
Angina Pectoris	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	1	....	....	....	....	1	....	....	....
Embolism and Thrombosis	2	....	...	1	1	....	....	....	....	....	....	....	....	...	....	....	....	....	1	....	....	....	....	....
Diseases of Lymphatic System	....	....	...	....	....	....	....	....	....	....	....	....	1	...	....	....	....	....	....	....	....	....	....	....
Hemorrhages	....	....	...	....	....	....	....	....	....	....	....	....	0	...	....	....	2	....	....	....	2	1	....	....
IV.																								
DISEASES OF RESPIRATORY SYSTEM.																								
Diseases of the Larynx	....	....																						
Bronchitis, Acute	1	....	2	1	....	....	2	1	....	....	2	2	3	2	3	2	4	1	1	4	3	1	2	3
Bronchitis, Chronic	....	....	...	....	1	....	....	....	1	....	....	....	....	...	2	....	....	....	....	....	....	....	....	....

TABLE II—Continued

	July		Aug.		Sept.		Oct.		Nov.		Dec.		Jan.		Feb.		Mar.		Apr.		May		June	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Pneumonia	4	1	2	5	6	4	12	6	25	4	22	19	24	19	19	8	23	14	28	20	17	6	9	4
Pleurisy	....	1	...	....	....	....	....	....	....	....	....	....	....	...	....	1	....	1	....	2	....	....	....	....
Pulmonary Congestion and Apoplexy	....	....	1	....	3	1	2	....	1	1	1	....	....	1	1	....	2	....	2	3	2	....	1	1
Asthma	....	....	...	....	....	....	2	....	1	....	3	....	3	...	3	....	1	....	....	....	1	1	....	....
Pulmonary Emphysema	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Other Diseases of Resp. System	....	....	...	....	....	....	....	....	1	....	....	....	....	...	1	....	....	....	....	....	....	....	....	....
V.																								
DISEASES OF DIGESTIVE SYSTEM.																								
Ulcer of Stomach	....	....	...	1	....	....	1	....	....	....	1	1	....	...	....	....	....	....	1	....	1	....	....	....
Other Diseases of the Stomach	1	....	...	....	2	2	....	....	1	1	....	....	....	...	1	....	1	....	2	....	....	....	1	....
Diarrhoea and Enteritis under 2	3	7	4	20	20	17	7	5	3	....	1	....	1	2	....	....	1	4	....	5	4	6	2	4
Diarrhoea and Enteritis, Chronic	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	1	....	....	....	....	....	....
Diarrhoea and Enteritis over 2	3	1	3	11	3	4	1	....	2	....	....	....	....	...	....	....	1	1	2	....	-	....	1	....
Hernia and Intestinal Obstruction	1	....	...	1	....	1	....	....	1	....	....	1	....	...	....	....	2	....	3	3	....	....	2	....
Cirrhosis of the Liver	3	1	...	1	1	....	....	1	2	....	2	2	1	...	....	....	....	....	....	1	1	....	....	....
Biliary Calculi	....	....	2	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Other Diseases of Liver	....	....	2	....	....	....	1	....	1	1	1	....	1	1	1	....	....	2	....	....	....	....	1	....
Peritonitis, Simple	....	2	...	2	1	1	1	1	2	2	....	1	....	1	2	3	....	2	....	1	3	2	1	1
Appendicitis and Abscess of Iliac-Fossa	2	1	3	2	3	2	1	....	....	1	....	2	4	1	....	2	....	1	2	....	3	....	4	....
VI.																								
DISEASES OF THE GENITO-URINARY SYSTEM AND ADENEXA.																								
Nephritis, Acute	....	....	1	....	1	....	1	....	1	....	2	1	2	1	....	2	1	....	2	1	1	1	1	1
Bright's Disease	8	4	9	3	10	2	4	5	4	2	6	3	6	5	5	2	4	4	10	2	1	1	9	3
Cysts and other Tumors of Ovaries	....	....	...	....	....	1	...	1	...	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Diseases of the Bladder	....	....	...	....	....	....	....	....	....	....	....	....	....	...	3	....	....	....	....	....	....	....	1	....
Diseases of the Prostate	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....

VII.																							
THE PUERPERAL STATE.																							
Accidents of Pregnancy	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Other Accidents of Labor	....	1	...	....	..	1	....	3	....	2	..	..	..	...	....	....	....	....	....	....	....	1	....	....
Septicaemia, Puerperal	....	....	...	....	....	....	....	1	....	....	....	1	....	...	....	....	....	....	....	....	....	....	....	....
Albuminuria and Eclampsia	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	1	....	2
VIII.																								
DISEASES OF SKIN AND CELLULAR TIS.																								
Gangrene	....	....	...	....	....	....	....	....	....	....	....	1	....	...	....	....	....	....	....	....	1	....	....	....
IX.																								
DISEASES OF ORGANS OF LOCOMOTION.																								
Diseases of Bones (Non-Tubercular	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	1	....	1
X																								
EARLY INFANCY.																								
Cengenital Debility, Icterus, Etc.	6	5	10	5	6	7	9	12	14	7	7	3	8	12	9	5	9	6	9	6	12	2	10	5
XI.																								
OLD AGE.																								
Senile Debility	4	....	5	5	6	4	6	4	4	3	6	6	14	...	9	2	5	3	7	5	9	1	2	4
XII.																								
AFFECTIONS PRODUCED BY EXTERNAL CAUSES.																								
Suiicide by Poisoning	....	....	...	1	....	2	3	....	1	1	3	1	2	1	1	1	2	....	1	....	3	2	1	1
Suicide by Hanging and Strangulation	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	1	....	1
Suicide by Drowning	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Siuicide by Firearms	....	....	2	....	3	....	1	....	1	....	2	0	2	...	3	1	2	....	1	....	5	....	1	1
Suicide by Cutting Instruments..	....	....	...	....	1	....	....	....	....	....	....	1	....	...	....	....	....	....	....	....	....	....	....	....

TABLE II Continued

	July		Aug.		Sept.		Oct.		Nov.		Dec.		Jan.		Feb.		Mar		Apr.		May		June	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Other Siucides	1	....	1	....	1	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Accidents with Fireams	2	....	4	1	2	1	4	....	1	....	1	....	1	...	....	....	1	....	....	....	....	....	....	....
Railroad Accidents	8	....	8	7	7	....	5	....	1	....	8	....	12	...	7	....	6	....	5	....	4	....	4	....
Accidents with Horses and Vehicles	3	....	3	1	4	....	2	....	3	....	....	....	....	...	2	....	3	....	2	....	1	....	3	1
Mine Accidents	6	....	2	....	3	....	9	....	2	....	5	....	3	...	5	....	5	....	4	....	2	....	14	....
Other Accidental Traumatisms	7	3	2	....	7	....	4	1	6	....	1	....	3	...	1	....	5	....	4	....	3	....	6	2
Burns and and Scalds	3	1	...	....	....	2	1	1	1	....	....	....	....	2	....	3	....	1	....	2	1	....	1	1
Isolation	1	....	...	....	2	....	....	....	....	....	....	....	....	...	....	....	....	....	1	....	....	....	....	....
Freezing	....	....	...	....	....	....	....	....	....	....	3	....	1	...	2	....	1	....	....	....	....	....	....	....
Electrical (Other than lightning)	....	....	...	....	....	....	....	1	....	....	....	....	....	...	....	....	1	....	....	....	....	....	....	....
Lightning	2	....	2	1	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Accidental Drowning	5	1	4	1	1	....	1	....	1	....	1	....	1	...	....	....	....	....	1	....	2	....	4	....
Accidental Poisoning	....	....	1	1	....	....	....	....	1	3	....	....	....	...	....	....	....	....	....	....	....	....	....	....
Other Ex. Violence (Homicide)	....	....	3	....	4	1	1	....	3	....	1	1	1	...	1	....	3	....	....	1	1	....	2	....
Legal Executions	....	....	...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1	....	1	....	1	....
XIII.																								
ILL DEFINED CAUSES.																								
Dropsy	2	1	2	1	....	....	2	2	....	2	3	1	....	2	1	3	1	....	4	....	....	....	2	....
Unspecified or Ill-defined	8	9	12	8	10	5	11	9	11	2	8	4	13	5	8	2	9	6	10	3	7	6	5	4
Still Births	15	11	9	5	9	10	9	9	7	6	10	7	12	16	10	7	13	10	10	8	5	4	6	4
Totals	165	73	149	111	163	93	164	89	162	71	152	92	188	108	157	74	170	108	177	96	160	78	136	78

Total Males	1,943
Total Females	1,071
Total Deaths	3,014
Estimated Papulation	280,000
Death rate per 1,000	10.8

TABLE

Showing Deaths by Ages and Sex, Arranged According

	Under 1 year		1 2		2 3		3 4		4 5		5
	M	F	M	F	M	F	M	F	M	F	M
I.											
GENERAL DISEASES.											
Typhoid Fever	...	....	....	....	1	1	....	....	....	....	....
Small-pox	...	....	....	....	....	....	....	....	....	....	....
Measles	...	3	1	1	1	....	....	....	....	....	....
Scarlet Fever	...	1	....	1	1	2	1	2	1	....	....
Whooping Cough	17	14	9	6	5	3	0	2	1	....	....
Diphtheria	2	3	4	3	5	1	3	2	2	3	10
Grippe (Influenza)	...	1	....	....	....	....	....	....	....	....	....
Spotted (Tick) Fever	...	....	....	....	....	....	....	....	....	....	....
Erysipelas	3	....	....	....	....	....	....	....	....	....	....
Purulent Infection and Septicaemia	...	....	....	....	....	....	1	....	....	....	....
Tubercle of the Lungs	2	....	....	1	....	1	....	....	....	....	....
Tubercle of the Meninges	...	1	1	1	1	....	....	2	....	1	1
Syphilis	1	1	....	....	....	....	....	....	....	....	....
Cancer of the Stomach and Liver	...	....	....	....	....	....	....	....	....	....	....
Cancer of peritoneum and intestines	...	....	....	....	....	....	....	....	....	....	....
Cancer of Female Gen. Organ	...	....	....	....	....	....	....	....	....	....	....
Cancer of the Skin	...	....	....	....	....	....	....	....	....	....	....
Cancer of Organs not Specified	...	....	....	....	....	....	....	....	....	....	....
Rheumatism, Acute Articular	...	....	....	....	....	....	1	....	....	....	....
Rheumatism, Chronic and Gout	...	....	....	....	....	....	....	....	....	....	....
Diabetes	...	....	....	....	....	....	....	....	1	....	....
Anaemia and Chlorosis	...	....	....	....	....	....	....	....	2	....	....
Alcoholism, Acute and Chronic	...	....	....	....	....	....	....	....	....	....	....
Saturnism (Lead Poisoning)	...	....	....	....	....	....	....	....	....	....	....
Other Chronic Poisonings	...	....	....	....	....	....	....	....	....	....	....
II.											
DISEASES OF THE NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE.											
Encephalitis	1	1	1	....	....	....	....	....	....	....	....
Meningitis, Simple	10	12	8	4	2	1	2	....	1	3	3
Cerebral Congestion and Hemorrhage	...	....	....	1	....	....	....	....	....	....	....
Cerebral Softening	...	....	....	....	....	....	....	....	....	....	....
Paralysis, General	...	....	....	....	....	....	....	....	....	....	....
Other Forms of Mental Alenation	...	....	....	....	....	....	....	....	....	....	....
Epilepsy	...	....	....	....	....	....	....	....	....	....	....
Convulsions of Children	14	5	1	....	....	1	....	1	....	....	....
Chorea	...	....	....	....	....	....	....	....	....	....	....
Tetanus	...	....	....	....	....	....	....	....	....	....	....
er Diseases of Nervous System	...	1	....	....	....	....	....	....	....	....	....
Diseases of the eye and its adenexa	...	....	....	....	....	....	....	....	....	....	....
Diseases of the ear	...	....	....	....	....	....	....	....	....	....	....
III.											
DISEASES OF THE CIRCULATORY SYSTEM.											
Pericarditis	...	....	....	....	....	....	....	....	....	....	....
Endocarditis	...	1	....	1	....	....	1	....	....	1	....
er Diseases of the Heart	2	....	....	1	....	....	3	....	....	....	1
Diseases of Arteries (Atheroma, Aneurism	...	....	....	....	....	....	....	....	....	....	....
Angina Pectoris	...	....	....	....	....	....	....	....	....	....	....
Embolism and Thrombosis	...	....	....	....	....	....	....	....	....	....	....
iseases of the Lymphatic System	...	....	....	....	....	....	....	....	....	....	....
Hemorrhages	...	....	....	....	....	....	....	....	....	....	....
IV.											
DISEASES OF THE RESPIRATORY SYSTEM.											
Diseases of the Larynx	...	....	....	....	....	....	....	....	....	....	....
Bronchitis, Acute	13	9	3	2	1	2	1	1	1	1	....

III.

to the International Classifiction as to Cause of Deaths.

10	10	15	15	20	20	30	30	40	40	50	50	60	60	70	70	80	Over 80		Totals		Grand Total
F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
...	3	3	5	3	25	1	17	3	15	4	5	1	2	....	....	....	....	....	73	16	89
1	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	1	1
...	....	....	1	1	....	....	....	1	....	....	...	....	....	....	....	....	....	....	3	6	9
1	....	1	....	....	....	....	....	1	....	....	...	....	....	....	....	....	....	....	3	6	12
1	....	0	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	32	26	58
9	3	4	1	....	2	3	....	1	....	....	...	....	....	....	....	....	....	....	32	29	61
...	....	....	....	....	....	1	....	1	....	....	...	....	....	1	....	2	....	....	....	6	6
1	....	....	1	....	3	....	....	1	2	1	...	....	1	....	....	....	....	....	7	3	10
...	....	....	....	....	....	....	2	....	1	....	...	1	1	....	....	....	....	....	7	1	8
1	1	2	1	1	1	10	4	14	2	2	1	....	....	....	....	....	1	....	12	30	42
...	3	....	3	5	25	23	34	26	47	11	25	2	8	1	1	1	....	....	148	71	219
...	....	....	1	1	....	....	....	....	....	....	...	....	....	....	....	....	....	....	4	6	10
...	....	....	....	1	....	....	....	....	....	....	2	....	2	....	....	....	....	....	5	2	7
...	....	....	....	....	....	....	3	5	6	2	3	1	12	3	2	3	1	....	27	14	41
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	1	....	1
...	....	....	....	....	....	....	....	1	....	2	...	....	....	....	....	1	....	....	....	4	4
...	....	....	....	....	....	....	....	....	....	1	...	....	1	....	....	....	....	....	1	1	2
...	....	....	....	....	....	1	1	4	4	6	3	6	3	3	....	....	....	....	11	20	31
...	1	....	....	....	1	....	1	....	....	....	1	....	....	....	....	....	....	....	5	....	5
...	....	....	....	....	....	....	....	....	....	....	...	....	3	....	3	....	....	....	6	....	6
1	....	1	....	....	....	....	2	....	....	....	1	1	1	1	....	....	....	....	5	4	9
2	....	....	....	....	....	....	....	....	....	1	1	1	1	....	....	....	....	....	4	4	8
...	....	....	....	....	1	....	4	....	6	....	8	....	4	....	2	....	....	....	25	....	25
...	....	....	....	....	....	....	....	....	1	....	...	....	....	....	....	....	....	....	1	....	1
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	2	1	3
2	....	1	....	....	....	....	2	1	1	....	1	....	....	....	....	....	....	....	30	24	54
...	....	....	1	....	2	....	....	1	2	....	10	2	2	....	3	1	2	1	22	6	28
...	....	....	....	....	....	....	1	1	3	1	2	....	....	2	2	....	....	....	8	4	12
1	....	....	....	1	....	....	2	1	4	2	3	3	12	2	5	5	5	4	31	19	50
...	....	....	....	....	1	1	2	1	1	2	1	....	....	2	2	2	....	....	7	8	15
...	1	....	....	....	1	....	3	1	4	....	1	....	2	....	1	....	....	....	13	1	14
2	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	15	9	24
1	....	....	....	....	....	1	....	....	....	....	...	....	....	....	....	....	....	....	....	2	2
...	....	....	....	....	1	....	....	....	1	....	...	....	....	....	....	....	....	....	2	....	2
...	....	1	....	1	2	1	....	4	1	1	2	....	....	....	....	....	....	....	5	9	14
...	1	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	1	....	1
...	....	....	....	....	....	....	1	....	....	....	...	....	....	....	....	....	....	....	1	....	1
...	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	1
2	5	1	1	2	2	5	10	....	5	3	5	5	8	6	1	2	2	1	40	30	70
...	1	2	....	3	2	....	4	7	8	4	10	2	10	....	5	....	1	2	47	21	68
...	....	....	....	....	....	....	....	....	....	....	3	....	2	....	3	....	1	....	9	....	9
...	....	....	....	....	....	....	....	1	....	....	...	....	1	....	....	....	....	....	1	1	2
...	....	....	....	....	....	1	1	....	1	....	1	....	1	....	....	....	....	....	4	1	5
...	....	....	....	....	....	....	....	....	1	....	...	....	....	....	....	....	....	....	1	....	1
...	....	..	....	....	....	1	....	....	1	....	...	....	3	....	....	....	....	....	4	1	5
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
...	....	....	1	....	1	....	....	1	1	....	1	....	....	....	....	1	....	....	23	17	40

TABLE III—

	Under 1 year		1 2		2 3		3 4		4 5		5
	M	F	M	F	M	F	M	F	M	F	M
Bronchits, Chronic	...	....	....	....	....	....	....	....	....	....	....
Pneumonia	29	9	8	9	9	6	....	3	1	2	5
Pleurisy	...	....	....	....	....	....	....	....	....	....	....
Pulmonary Congestion and Apoplexy	1	....	....	....	....	....	....	....	....	....	....
Asthma	...	....	....	....	....	....	....	....	....	....	....
Pulmonary Emphysema	...	....	....	....	....	....	....	....	....	....	....
Other Diseases of Respiratory System	...	....	....	....	....	....	....	....	....	....	....
V.											
DISEASES OF THE DIGESTIVE SYSTEM.											
Ulcer of the Stomach	...	....	....	....	....	....	....	....	....	....	....
Other Diseases of the Stomach	...	....	....	....	....	....	....	....	....	....	....
Diarrhoea and Enteritis, under 2 years	65	48	13	10	....	....	....	....	....	....	....
Diarrhoea and Enteritis, Chronic	...	....	....	....	....	....	....	....	....	....	....
Diarrhoea and Enteritis, over 2 years	...	....	....	....	7	3	2	8	....	....	3
Hernia and Intestinal Ostruction	2	1	1	....	1	....	....	....	....	....	1
Other Diseases of the Intestines	...	....	....	....	....	....	....	....	....	....	....
Cirrhosis of the Liver	...	....	....	....	....	....	....	....	....	....	....
Biliary Calculi	...	....	....	....	....	....	....	....	....	....	....
Other Diseases of the Liver	...	....	....	....	....	....	....	....	....	....	....
Diseases of the Spleen	...	....	....	....	....	....	....	....	....	....	....
Peritonitis, Simple	1	....	2	....	....	....	....	....	1	1	....
Other Diseases of the Digestive System	...	....	....	....	....	....	....	....	....	....	....
Appendicitis and Abscess of Iliac Fossa	...	....	....	....	....	....	....	....	....	....	....
VI.											
DISEASES OF THE GENITO URINARY SYSTEM AND ADENEXA.											
Nephritis, Acute	3	2	1	....	1	....	....	....	....	....	1
Bright's Disease	...	....	1	1	....	....	....	....	....	....	....
Diseases of the Bladder	...	....	....	....	....	....	....	....	....	....	....
Diseases of the Prostate	...	....	....	....	....	....	....	....	....	....	....
VII.											
THE PUERPERAL STATE.											
Accidents of Pregnancy	...	....	....	....	....	....	....	....	....	....	....
Other Accidents of Labor	...	....	....	....	....	....	....	....	....	....	....
Septicaemia, Puerperal	...	....	....	....	....	....	....	....	....	....	....
Albuminuria and Eclampsia	...	....	....	....	....	....	....	....	....	....	....
VIII.											
DISEASES OF SKIN AND CELLULAR TISSUE.											
Gangrene	...	....	....	....	....	....	....	....	....	....	....
Carbuncle	...	....	....	....	....	....	....	....	....	....	....
IX.											
DISEASES OF ORGANS OF LOCOMOTION.											
Diseases of Bones (Non-tubercular)	...	....	....	1	....	....	....	....	....	....	....
Arthritis and Other Diseases of Joints	...	....	....	....	....	....	....	....	....	....	....
X.											
MALFORMATIONS.											
Malformations, Congenital. Stillbirths, ex.	..	....	....	....	....	....	....	....	....	....	....

Continued

10	10 15		15 20		20 30		30 40		40 50		50 90		60 70		70 80		Over 80		Totals		Gr'nd Total
F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
...	....	....	....	....	....	....	....	....	1	....	1	....	2	....	....	....	....	....	4	....	4
6	1	....	3	2	24	15	35	14	30	5	20	6	11	11	13	5	2	....	191	112	303
...	....	....	....	1	....	....	....	1	....	....	...	....	....	2	....	1	....	....	....	5	5
...	....	....	1	....	....	....	....	....	1	2	6	1	4	2	3	....	2	2	18	7	25
...	....	....	....	....	1	....	....	....	3	....	7	....	....	....	3	1	....	....	14	1	15
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
...	....	....	2	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	2	....	2
...	....	....	....	....	....	....	2	2	2	....	1	....	....	....	....	....	....	....	5	2	7
...	....	....	1	....	1	....	1	....	1	1	3	....	1	1	....	1	....	....	8	3	11
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	78	38	136
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	1	....	....	....	1	....	1
1	....	....	....	1	....	2	....	....	1	2	2	....	1	....	1	....	....	....	17	17	34
...	....	....	....	....	1	....	....	....	....	1	...	....	....	1	....	....	....	....	6	3	9
...	....	....	....	....	2	2	....	....	1	1	...	....	....	....	....	....	....	....	3	3	6
...	....	....	1	....	....	....	1	2	4	1	3	2	....	....	1	1	....	....	10	6	16
...	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	2	....	2
...	1	....	....	....	1	1	....	....	....	....	...	3	1	....	2	....	1	....	6	4	10
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
2	....	2	1	....	....	8	1	3	3	2	..	1	....	....	....	....	....	....	10	19	29
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
3	3	2	2	4	5	1	5	1	3	1	3	....	1	....	....	....	....	....	22	12	34
1	1	2	....	....	1	-	3	1	1	....	1	....	....	....	....	....	....	....	13	7	20
...	2	....	....	1	4	5	4	5	16	10	16	5	16	5	13	4	4	....	76	36	112
...	....	....	....	....	....	....	....	....	1	....	1	....	1	....	....	....	1	....	4	....	4
...	....	....	....	....	....	1	....	....	....	....	...	....	....	....	....	1	....	....	....	2	2
...	....	....	....	....	....	....	....	2	....	....	...	....	....	....	....	....	....	....	....	2	2
...	....	....	....	....	....	4	....	5	....	....	...	....	....	....	....	....	....	....	....	8	8
...	....	....	....	....	....	2	....	....	....	....	...	....	....	....	....	....	....	....	....	2	2
...	....	....	....	....	....	1	....	1	....	2	...	....	....	....	....	....	....	....	....	4	4
...	....	....	....	....	....	....	....	....	....	....	...	....	....	1	....	....	1	....	1	1	2
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
...	....	....	....	....	....	1	....	....	....	....	...	....	....	....	....	....	....	....	....	2	2
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....

TABLE III. –

	Under 1 year		1 2		2 3		3 4		4 5		5
	M	F	M	F	M	F	M	F	M	F	M
XI.											
EARLY INFANCY.											
Congenial Debility, Icteurs, and Scleroma	109	75	....	....	....	....	....	....	....	....	....
XII.											
OLD AGE.											
Senile Debility	...	....	....	....	....	....	....	....	....	....	....
XIII.											
AFFECTIONS PRODUCED BY EXTERNAL CAUSES.											
Suicide by Poisons	...	....	....	....	....	....	....	....	....	....	....
Suicide by Hanging and Srtangulation	...	....	....	....	....	....	....	....	....	....	....
Suicide by Drowning	...	....	....	....	....	....	....	....	....	....	....
Suicide by Firearms	...	....	....	....	....	....	....	....	....	....	....
Suicide by Cutting Instruments	...	....	....	....	....	....	....	....	....	....	....
Other Suicides	...	....	....	....	....	....	....	....	....	....	....
Accidents with Firearms	...	....	....	....	....	....	....	....	....	....	3
Railroad Accidents	...	....	....	....	1	....	....	....	....	....	1
Accidents with Horses and Vehicles	...	....	....	....	....	....	....	....	....	....	1
Mine Accidents	...	....	....	....	....	....	....	....	....	....	....
Other Accidental Traumatisms	1	....	....	....	....	....	....	....	1	1	....
Burns and Scalds	...	....	1	2	1	4	1	....	2	3	....
Isolation	...	....	....	....	....	....	....	....	....	....	....
Freezing	...	....	....	....	....	....	....	....	....	....	....
Electrical (Other than Lightning)	...	....	....	....	....	....	....	....	....	....	....
Lightning	...	....	....	....	....	....	....	....	....	....	1
Accidental Drowning	...	1	....	....	....	....	....	....	....	....	....
Accidental Poisoning	...	....	....	....	....	....	....	....	....	....	....
Other External Violence (Homicide)	...	....	....	1	....	....	....	....	....	....	....
Legal Execution	...	....	....	....	....	....	....	....	....	....	....
XIV.											
DEATHS FROM ILL-DEFINED CAUSES.											
Dropsy	...	....	..			....	....	....	....	....	....
Unspecified or Ill-defined causes	1	3	1	3	1	5	....	3	1	3	3
Stillbirths	115	97	....	....	....	....	....	....	....	....	....
Totals	392	309	56	48	38	30	16	24	15	19	34

Continued

IC	10 15		15 20		20 30		30 40		40 50		50 60		60 70		70 80		Over 80		Totals		Gr'nd Total
F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	109	75	184
...	....	....	....	....	....	....	....	....	....	....	...	....	5	5	33	12	39	20	77	37	114
...	....	....	....	2	4	2	6	3	4	2	3	1	....	....	....	....	....	....	17	10	27
...	....	....	....	....	....	....	....	....	1	....	...	....	1	....	....	....	....	....	2	....	2
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....
...	....	....	....	....	2	....	5	2	8	....	5	....	4	....	1	....	....	....	25	2	27
...	....	....	....	....	....	....	....	....	1	1	...	....	....	....	....	....	....	....	1	1	2
...	....	....	....	....	2	....	1	....	....	....	...	....	....	....	....	....	....	....	3	....	3
...	2	....	3	....	1	2	3	....	1	....	2	....	1	....	....	....	....	....	16	2	18
...	2	1	2	2	24	2	16	1	21	1	6	....	2	....	....	....	....	....	75	7	82
1	....	....	1	....	5	....	4	1	9	....	4	2	....	....	....	....	....	....	26	2	28
...	....	....	1	....	22	....	20	....	14	....	2	....	1	....	....	....	....	....	60	....	60
...	2	2	....	....	11	1	14	....	4	1	8	....	6	1	1	....		1....	49	6	55
...	....	....	1	....	....	....	....	1	1	2	...	1	....	....	....	....	....	....	60	....	60
...	....	....	....	....	....	....	....	....	1	....	1	....	1	....	1	....	....	....	4	....	4
...	....	....	....	....	....	....	....	....	2	....	3	....	2	....	....	....	....	....	7	....	7
...	....	....	1	....	....	....	....	....	....	1	...	....	....	....	....	....	....	....	1	1	2
...	....	....	....	....	1	1	....	....	1	....	1	....	....	....	....	....	....	....	4	1	5
...	5	....	3	1	5	....	2	....	3	....	2	....	1	....	....	....	....	....	21	2	23
...	....	....	....	3	....	1	....	....	1	....	1	....	....	....	....	....	....	....	2	4	6
...	....	....	....	....	2	1	9	....	5	1	1	....	3	....	....	....	....	....	20	3	23
...	....	....	....	....	....	....	....	....	1	....	1	....	1	....	....	....	....	....	3	....	3
1	1..	1	....	....	....	....	....	1	5	....	2	1	5	6	3	1	....	2	17	12	29
2	4	7	2	5	10	4	13	13	29	10	15	7	18	2	11	6	3	....	112	73	185
...	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	115	97	212
42	43	34	40	45	201	104	239	128	298	90	214	55	171	60	118	51	67	32	1943	1071	3014

CONCLUSIONS DRAWN FROM TABULATED STATEMENTS REGARDING DEATHS.

Before going into the conclusions to be drawn from these statements, let us set forth the manner in which the data has been collected. We have stated above how undertakers and merchants were applied to each month and some of the trouble taken by many of them to secure accurate data. In addition to this other work has been done. Not infrequently the report of the undertaker states that cause of death could not be ascertained or the cause given is meaningless. In such cases the Secretary of the State Board of Health has written to members of family of deceased, or to any person whom he thought would be able to give him a positive statement as to the cause of death. In several instances it has been necessary to write as high as twenty-five and twenty-eight letters to secure the cause of death in a single instance and each month found numerous letters to be written in order to find the cause of death in various instances. This meant no small amount of work, but we believe the results justify the efforts. In a good many instances it was impossible to secure a scientific cause of death and each of these deaths are classified as ill defined. We do not think that all the deaths that occurred in the state are recorded, we know of some that are not, but we do believe that not more than 10 per cent are lacking.

In our last report we gave the number of deaths in the State as they were reported to the various county clerks. This showed that there were only 1,470 deaths in the State during 1904 and this number included 698 deaths that were reported to the health officer of the city of Butte, leaving only 772 deaths that were reported to the county clerks. We ventured to assert that this number did not represent more than half the deaths that occurred in the State. We have collected data regarding 3,014 deaths during the year ending June 30th, 1906, and of this number 822 were reported from Silver Bow county, leaving 2,192 as having occurred in other counties, as against 772 for the year 1904. In othr words when we asserted that less than one-half of the deaths are recorded, we would have been perfectly safe in saying that less than one-third of them are recorded with county clerks.

The idea prevails among the people of Montana, and is supported by some physcians, that typhoid fever is not nearly as fatal in this State as it is in many others, especially the eastern states. This idea has resulted in little care being taken to prevent this disease. People, on being urged to improve the sanitary conditions under which they live, have repeatedly stated, "Well, what if we do get typhoid, it don't amount to much out here," and the secretary of this board once had this very argument presented by the chairman of a school board when he urged that a better water supply be furnished the school children. These figures show that during the year ending June 30, 1906, there were 89 deaths in Montana from typhoid fever. The estimated population of the State is 280,000, which means that the death rate from typhoid fever was 31.4 per 100,000. The United States census report shows that the average death rate in 1904 from typhoid fever in all registration states (and these states include the typhoid district), was 24 per 100,000. In other words, the death rate per 100,000 from typhoid fever was 7.4 higher than in the registration states. In the registration states the causes of all deaths are secured; in Montana we were unable to secure them all. In registration states the cause of death must be given accurately, while we are convinced that several deaths reported as due to "summer complaint," were in reality due to typhoid fever.

Of the 89 deaths reported as due to typhoid fever 79 were between the ages of 15 and 50 years, the most productive season of a man's life. Typhoid fever caused 89 deaths, while railroad accidents caused only 82 and mine accidents resulted in only 60 deaths. We do not begrudge the money expended in mine inspection, which results in the low rate of mortality in our numerous mines, but we do think it time that something was being expended to see that the excreta from typhoid patients is properly disposed of. In the matter of railroad accidents, we believe that these would be greatly reduced if the companies were not allowed to keep men at work when they are so sleepy that they are utterly unable to hold their eyes open, much less give proper attention to the important task of taking people through the night at the rate of from forty to sixty miles an hour.

The death rate from smallpox, measles and scarlet fever are about on a par with those of other states. These diseases are said to be less fatal in Montana than they are "back east," but the records show that just about as many people die from them in Montana as die from them in New York or any other state from which we have accurate data. This being the case in a state no more densely populated than is Montana, it behooves the people of our state to be up and moving in the matter of sanitary precautions, else, with an increased population, we present the aspect of murderers, in that we permit our children to die of diseases that are easily prevented.

Whooping-cough is considered a harmless disease, no precautions are taken to prevent its spread. I have seen children in school, in church, in theaters and running at large with whooping-cough. Mothers take no more precautions to prevent the spread of this disease than to prevent the spread of rheumatism. But how harmless is this disease? Just about as harmless as a rattlesnake, and if the same precautions were taken to prevent young children from contracting whooping-cough that are taken to prevent them from being bitten by snakes the records would show no deaths from whooping-cough, as they do from snake bite. But such is not the case, and as a result the records show that 58 children paid, with their lives, for the lack of consideration on the part of mothers who let their children with whooping-cough run at large. This "harmless" disease claimed only two less lives than did the important industry of mining. True these were all the lives of young children, but they would have grown to be young men and women, good citizens of the State of Montana.

Diphtheria claimed 61 lives, or a death rate of 21.8 per 100,000. This is a death rate of 2.8 less than that of the registration states. But why should it not be still lower. Montana is sparsely settled and these diseases do not spread with the same readiness that they do in a thickly settled community. Our death rate from any communicable disease should be much less than that of any registration state which is thickly populated.

In the matter of tuberculosis our State makes an excellent showing. There were 71 deaths per 100,000 in our State from this disease, while the average for registration states in 1904 was 164.7 per 100,000 This is as it should be, it is natural from the fact that our people live out of doors, and the same relation should exist between all communicable diseases as they occur in our State and in the thickly populated states.

Pneumonia is the dread of our State. The disease has been given such a bad reputation that a nervous individual is half frightened to death if the disease is merely suspected. Some time ago I read a statement by a member of the medical corps of the United States Army to the effect that pneumonia was no more fatal in high than in low altitudes. At that time I said to myself "he is not talking about Montana," for I was imbued with the idea that pneumonia was more fatal here than in lower altitudes, but the results of the death records for a single year show that pneumonia is either less prevalent here than it is in the older states, or it is less fatal. Our observations do not lead us to believe that it is any less prevalent here than it is in New York, or other of the older states, hence we can but conclude that it is not any more, if as fatal as it is in other states. There is no more reason why one should be frightened when suffering from pneumonia in Montana than when confronted with the same disease in any other state.

Thus, collection of deaths for a single year serves to demonstrate that communicable diseases are quite as fatal in Montana as they are in other states and therefore great efforts should be exerted to prevent the spread of such diseases; and that pneumonia is not more fatal here than elsewhere, therefore much of the fright that comes with the disease may be prevented and the patient given a better chance to recover.

There are a good many things that these records do not show which complete records of deaths would show. Among these are the influence of occupation on mortality in our State. This is an important matter and complete, accurate data on the subject would result in the saving of many lives. Nationality or birth place of deceased is important in order that we may know what influence the change from other climates has had on the patients and how many of our deaths are the result of people coming here on account of bad health. These things can be had by proper laws, but even the records herewith presented can not be continued without proper laws. We, therefore, appeal to the legislature of Montana to place this State in the registration class.